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Net control issues cloud frame relay

By Paul Desmond
Senior Editor

As the first frame relay services begin to emerge, so do tough questions about network management and congestion control.

Analysts say acceptance of frame relay may be hindered until carriers offer users some way to manage the service, starting with the ability to monitor traffic on the network.

Others say a bigger problem with both public and private frame relay nets will be handling the congestion that results from too many devices vying for the same bandwidth.

"When congestion problems start to occur, users will have significant problems," said Jim Harrison, program director at the META Group, a consultancy in Westport, Conn. "We believe users' expectations for frame relay are too high."

For the most part, there is no mechanism in place to slow traffic flow into a frame relay network from its point of origin. Although some vendors have devised ways around the problem, none of their solutions totally prevents frames from being discarded due to congestion or re-

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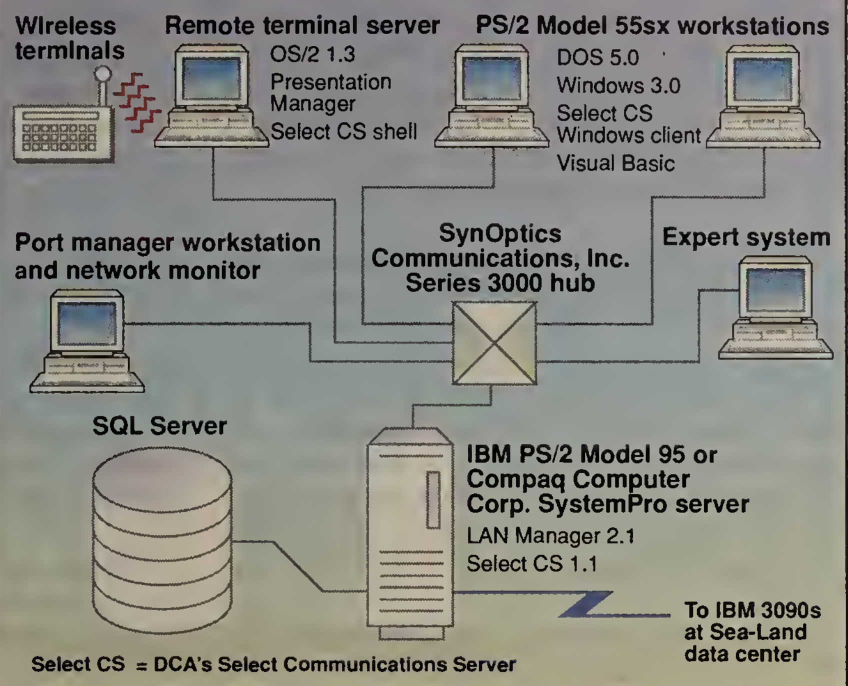
Sea-Land mulls client/server net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Visual Basic
Port manager workstation and network monitor
SynOptics Communications, Inc. Series 3000 hub
Expert system
SQL Server
IBM PS/2 Model 95 or Compaq Computer Corp. SystemPro server
LAN Manager 2.1
Select CS 1.1
To IBM 3090s at Sea-Land data center
Select CS = DCA's Select Communications Server

Replacing dumb terminals and cluster controllers at remote ports with Microsoft Corp. LAN Manager-based nets will enable Sea-Land to run applications locally, providing a way to customize front-end applications using 3270 services to access information on data center hosts.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: SEA-LAND SERVICE, INC., ELIZABETH, N.J.

Sea-Land tests client/server network for shipping ports

By Charles Bruno
Assistant Managing Editor

ELIZABETH, N.J. — Sea-Land Service, Inc. is beta-testing LAN Manager 2.1 and Digital Communications Associates, Inc.'s Select Communications Server (CS) for a client/server-based net that promises to vastly improve operations at the firm's shipping terminals.

Replacement of IBM 3270 terminals at remote ports with local-area network-based personal computers promises to give Sea-Land personnel simplified access to IBM 3090 mainframes at the company data center here.

Migrating computer intelligence out to the shipping ports will also allow Sea-Land to deploy more powerful support tools that enable port managers to base decisions on actual operating conditions.

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Lotus outlines plans to fortify groupware

Company will 'open' Notes environment with new data access, open messaging and other features.

By Timothy O'Brien
West Coast Bureau Chief

CAMBRIDGE, Mass. — In a bid to open up its Notes groupware, Lotus Development Corp. will enhance the package to support a variety of databases, an open message interface and new connectivity options, including SNA and X.25 links.

In a strategy briefing for *Network World* at Lotus headquarters here, officials said the company wants to position its popular Notes product as an open platform for work group applications. To that end, Lotus is trying to enhance the networking, data access and messaging capabilities of the product and is working on new features that may include a software distribution facility.

Lotus may also give Notes customers a wealth of applications developed by other users for the Notes environment.

"There's no need on our part to reinvent the wheel," said June Rokoff, vice-president of Lotus' communications and information services group. "[We] just hook into what's out there. That's the general direction we're moving in."

Analysts agreed. "Lotus has developed a group communications environment that does, in fact, have boundaries," said Ann Palermo, director of office systems research at International Data Corp, a market research

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Opening up Notes

Among the features Lotus will add for its groupware product:

- Links to multivendor databases
- An open message interface
- Support for Macintosh clients
- SNA, X.25 network support
- A portfolio of Notes-based applications

GRAPHIC BY SUSAN SLATER

CrossComm unifies LAN management

By Maureen Molloy
Staff Writer

MARLBOROUGH, Mass. — CrossComm Corp. today will announce a redesigned version of its network management system that will enable users to monitor and control IBM Token-Ring Networks as well as devices supporting the Simple Network Management Protocol (SNMP).

CrossComm's ILAN Internetwork Management System (IMS) 5.0 will offer users an alternative to IBM's LAN Network Manager, which currently does not control Ethernet-based devices.

"This will allow Big Blue shops to integrate management of their [local] networks, rather than using LAN Network Manager for their IBM gear and an SNMP-based manager for the pockets of other computing architectures,"

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NETLINE

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GROUPS HATCH PLAN for transcontinental project to demo ISDN technology. Page 2.

NOVELL, STRATUS TEAM to build NetWare for fault-tolerant computers. Page 4.

NREN BILL GETS SENATE nod, awaits presidential signature. Page 4.

UNISYS TO ENHANCE CTOS links to SNA networks. Page 4.

STUDY ASSERTS COMPUTER and network viruses are growing at an alarming rate. Page 4.

NM FORUM PLANS LIBRARY of network object definitions for vendors' systems. Page 4.

FCC WAIVES DEADLINE, approves Tariff 12 deals with 800 service. Page 6.

NEWSPAPER

FEATURE

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Vendors take varied tacks to integrated management

By Bruce Guptill
Special to Network World

An integrated network management system (INMS) is like an unidentified flying object in one sense: A lot of people have reported seeing one, but none of them can agree on what it looks like.

An INMS can be many things, including software that monitors various devices on a local-area network, a hardware/software system that ties multiple LAN management systems together or a hardware/software system that monitors and controls a single vendor's entire product line or multiple vendors' products.

A broad range of products falls into those categories. However, this Buyer's Guide focuses solely on products that collect information from multiple network elements, element management systems (EMS) or other INMSs and then

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BT North America to offer int'l frame relay service

Firm to make ExpressLANE available immediately to London, Paris; pricing to rival private circuits.

By Barton Crockett
Senior Editor

SAN JOSE, Calif. — BT North America, Inc. today plans to become the first international service provider to announce immediate availability of a frame relay service between the U.S. and Europe.

BT North America will announce it has extended its U.S.-based ExpressLANE frame relay service to London and Paris, with plans to offer the service to Amsterdam and Frankfurt, Germany, in early 1992.

BT North America officials are also expected to announce plans next year to support fractional T-1 speeds with ExpressLANE, although it is unclear if that will be available on either a domestic or international basis. Currently, BT North America only supports ExpressLANE service at speeds up to 64K bit/sec.

BT North America officials said the international frame relay service will be priced attractively in comparison to international private lines. For example, the company said it will charge $3,900 per month for a dedicated 64K bit/sec link to the London node and $4,100 per month for a dedicated 64K bit/sec link to the Paris node.

In the U.S., users will pay $2,700 per month for dedicated

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National ISDN 1 ready to face transcontinental trial

COS, NIU net to test equipment interoperability.

By Bob Wallace
Senior Editor

MCLEAN, Va. — The Corporation for Open Systems International (COS) and the North American ISDN Users' (NIU) Forum last week outlined plans for a transcontinental ISDN project that will demonstrate interoperability among Integrated Services Digital Network equipment and services.

The Transcontinental ISDN Project (TRIP) '92 is designed to show users that ISDN offerings from multiple suppliers can interoperate using National ISDN 1, an emerging ISDN specification.

In TRIP '92, users, equipment vendors and carriers will interconnect customer premises equipment and central office switches in the U.S., Canada and possibly overseas through ISDN services.

TRIP '92 is backed by COS, Bell Communications Research, the Jet Propulsion Laboratory, the Lawrence Livermore National Laboratory, the National Institute of Standards and Technology, Northern Telecom, Inc., Pacific Bell and others.

The game plan

In the three-phase project, U.S. and Canadian carriers will equip a set of switches with National ISDN 1-compliant soft-

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AT&T asks FCC to overturn ruling on Tariff 12 bundling

By Anita Taff
Washington Bureau Chief

WASHINGTON,D.C. — AT&T last week pressed the FCC to overturn an August decision barring the carrier from bundling 800 services into new Tariff 12 or contract deals.

In a surprise move, AT&T attempted to block rivals from offering such bundled packages. Several large user groups and rival carriers asked the Federal Communications Commission to reconsider the ruling out of fear it could stifle competition and crimp users' net plans.

AT&T also asked the FCC to reverse its so-called fresh look ruling. That decision is strongly supported by customers because it would give them the right to terminate Tariff 12 deals without penalty and purchase service from other carriers in the future.

In its August ruling, the FCC relaxed regulation for most AT&T business services, allowed the carrier to offer service through contracts and issued new rules governing some services.

Although AT&T, the Ad Hoc Telecommunications Users Committee, MCI Communications Corp. and US Sprint Communica-

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Briefs

WilTel to enhance frame relay. WilTel this week is expected to announce several new access port connection speeds for its WilPak frame relay service, as well as revamped service pricing. The carrier, which now supports port speeds of 56K/64K, 256K and 1.024M bit/sec, will offer 384K, 512K and 768K bit/sec speeds. When StrataCom, Inc. enhances its IPX multiplexer — which WilTel uses in its net — to support 1.544M bit/sec in the first quarter of next year, WilTel will add that port speed to its list. Chris Heckart, WilTel's marketing product manager for broadband services, said the company also plans to rework WilPak pricing to bring it "more in line with frame relay services offered by US Sprint and CompuServe [Inc.]."

IBM to overhaul corporate structure. IBM Chairman John Akers last week issued a statement confirming that the company is reorganizing in order to create more independence among its business units, cut expenses and get products to market faster ("IBM execs discuss router delay, reorganization plan," *NW,* Nov. 25). IBM intends to cut its work force by about 20,000 by the end of next year, in addition to the 20,000 jobs it expects to cut by year end. IBM began the year with 373,000 employees.

The cuts, along with other restructuring actions, will result in a charge of about $3 billion against IBM's fourth-quarter earnings, which Akers said would be the best reported this year. The restructuring is expected to save the company $1 billion in 1992 and $2 billion each year thereafter.

Among the other changes are moves to give each IBM business unit more autonomy in an effort to drive down development costs and shorten product development cycles. The changes will eventually include more financial independence, which means each business unit will report its own financial results. Akers said more details on the reorganization will be unveiled in coming weeks.

Bill to spur local-loop competition. Sen. Daniel Inouye (D-Hawaii) last week introduced the Information Services Diversity Act of 1991, which would require all local telephone companies to offer interconnection to competitive carriers on a nondiscriminatory basis. The bill would also set new boundaries for the Bell companies in information services — an area the courts recently permitted them to enter. It would allow the Bells to provide any information service outside their regions but would prohibit them from providing the content of information services within their regions until 50% of all businesses and residences have access to competitive services.

ATC buys regional resellers. Advanced Telecommunications Corp. (ATC), which bills itself as the nation's fourth largest publicly held long-haul carrier, last week agreed to purchase five related long-haul service resellers and operator service providers for $35 million in cash and ATC stock. The company agreed to buy AmeriCall Systems of Louisville, Ky., Dedicated Data Services and AmeriCall Dial 0 Services, Inc., which principally serve Kentucky, as well as First Phone of New England and First Phone Dial 0 Services, Inc., most of whose customers are in Massachusetts. ATC was able to buy the companies in one business deal because they are owned by common shareholders. The acquisitions are expected to be completed early next year.

3Com joins Internet Society. 3Com Corp. last week said it has become a founding member of the Internet Society, an emerging group focused on increasing the use of the Internet. 3Com announced that it is the first company to commit a $10,000 grant to further the group's goals. The Internet Society, which will begin operations in January, will work with users and vendors involved in the use and evolution of the Internet. The group's initial organizers include the Corporation for National Research Initiatives, Educom and the Internet Activities Board.

Telco to aid telecommuters. The Ohio Bell Telephone Co. last week said it will send customers an 18-page booklet called "The Ohio Bell Work-at-Home Guide," which provides information on telecommunications products and services that can make home-based workers more productive. A second booklet, called "The Home Office Modem Reference Manual," will help customers troubleshoot modem problems. Ohio Bell estimates that 495,000 people in the state work at home.

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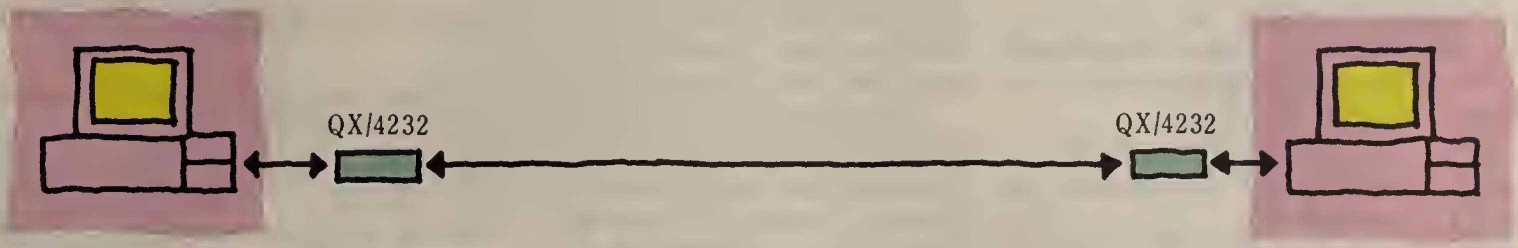

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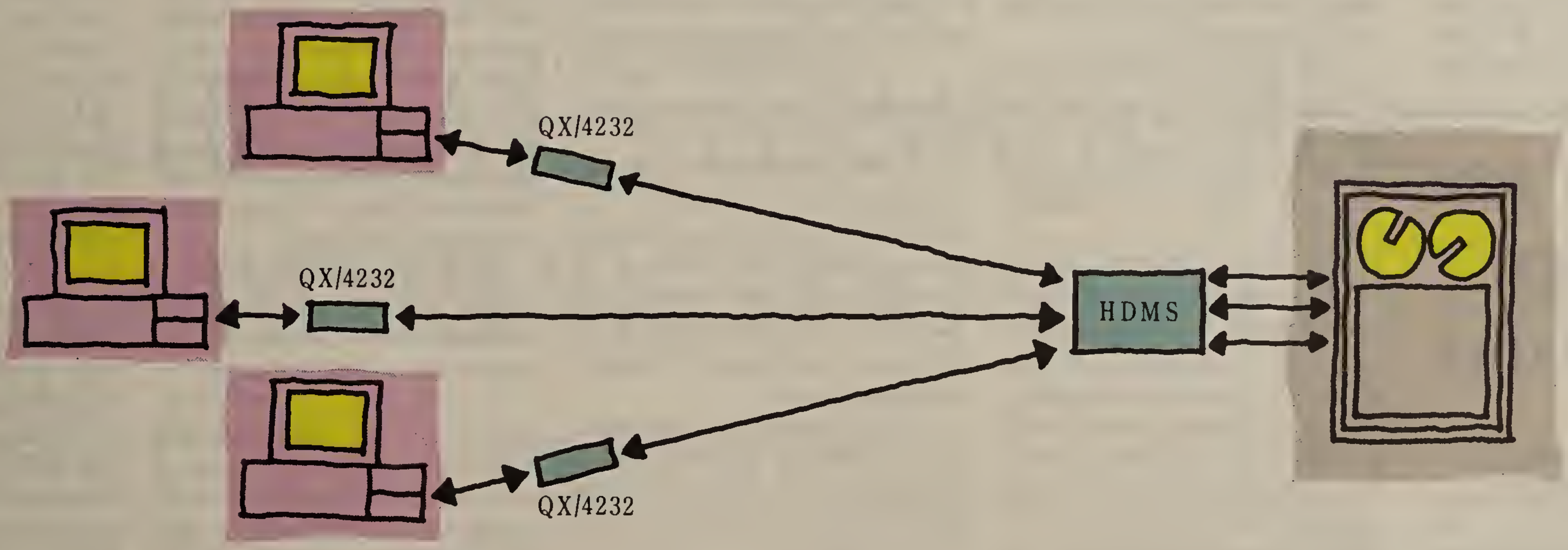

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Novell, Stratus to develop NetWare for OLTP servers

By Caryn Gillooly
Senior Editor

MARLBOROUGH, Mass. — Novell, Inc. and Stratus Computer, Inc. this week are expected to announce an agreement to jointly develop a version of Novell's NetWare to run on Stratus' fault-tolerant computers.

The alliance is expected to be the first of several such agreements to develop versions of NetWare to run on minicomputer or Unix server platforms. According to analysts, Novell is close to announcing similar deals with Digital Equipment Corp. and Hewlett-Packard Co.

Development of a NetWare version for Stratus machines will give users on NetWare local-area networks access to on-line transaction processing (OLTP) applications running on a Stratus device. It will also provide users that need a high degree of fault tolerance with a hardware platform to support NetWare.

Novell and Stratus declined to comment on the pending announcement.

The new software will be based on Novell's Portable NetWare and will support VOX, Stratus' proprietary version of Unix, according to Jamie Lewis, vice-president of Clarke Burton Corp., a Salt Lake City consultancy.

NetWare for VOX will include the basic set of NetWare services that are included in native NetWare, but it will run on Stratus machines. This will let the Stratus host interoperate with existing NetWare servers and grant NetWare clients transparent access to OLTP applications.

With a Stratus machine positioned as the NetWare server, a LAN administrator can also implement NetWare on a fault-tolerant server. "This means you'll be able to put a server [onto your network] that doesn't fail," said Cliff Friedman, senior technical analyst at Bear, Stearns & Company, Inc., based in New York.

Analysts said the announcement is targeted at users in the financial services and banking industries, where OLTP applications are the mainstay of the business.

"Stratus is employed in big investment banks and the stock exchanges," said Mark Freund, president of Interconnect Network Consulting Group, Inc. in Santa Monica, Calif. In many of these same organizations, NetWare LANs are also employed. However, NetWare users cannot currently access OLTP applications running on the Stratus machines, he added.

Analysts said the new NetWare version would appeal to a limited

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NREN is one step away from reality

By Ellen Messmer
Washington Correspondent

WASHINGTON, D.C. — The bill that would lead to the creation of a gigabit-speed nationwide network sailed through the Senate days after it cleared the House and now only awaits the president's signature in order to become law.

Sen. Albert Gore's (D-Tenn.) bill, the High-Performance Computing Act of 1991, calls for the National Science Foundation (NSF) to coordinate the five-year installation of a gigabit-speed National Research and Education Network (NREN) on the foundation of the NSF Network (NSFNET).

But today's NSFNET, which will be dubbed the Interim Inter-Agency NREN as it approaches gigabit speed, is facing a turning point. NSF revealed last week it will ask in February to be allowed to reissue the current NSFNET backbone. In the spirit of competitiveness, NSF wants to see two NSFNET backbones created and plans to name two winning vendors.

The current network is managed by Merit, Inc., a consortium of Michigan universities, which won a five-year contract in 1987 from NSF to provide a T-1 backbone. Merit last year established Advanced Network & Services, Inc. (ANS) with partners IBM and MCI Communications Corp. as the subcontractor to manage NSFNET.

The Merit contract expires in November 1992, and with it, the old NSFNET. That fact, coupled with passage of the NREN bill, is forcing government officials to reevaluate how the program to develop a gigabit-speed network should proceed.

"We've been consulting with the community at large about what we should do," said Steve Wolff, director of NSF's networking division.

NSF wants to award NSFNET contracts to two vendor teams in order to spur competition and ensure that the NREN high-speed technology will be more widely shared throughout the industry. The two winners will have to guarantee interoperability between the networks.

Wolff said that NSF now wants to procure services, not dedicated circuits — the approach NSF

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Study results give glimpse into prevalence of viruses

By Salvatore Salamone
Features Writer

WASHINGTON, D.C. — Virus infections are growing at an exponential rate among large user sites, according to a virus prevalence study released here last week by Dataquest, Inc. and the National Computer Security Association (NCSA).

The study results, announced at the First International Conference of Anti-Virus Product Developers, found that 40% of the users surveyed had encountered a virus during the third quarter this year. That's up from the 25% infection rate the same users said they had in the second quarter and the 19% rate in the first quarter. Last year, only 26% reported having viruses during the year.

These numbers confirm what many in the industry have been observing. "We've taken over 100,000 calls of infection incidents this year," said John McAfee, president of McAfee Associates, a Santa Clara, Calif.-based antivirus software company. "[Throughout] last year, we received less than 30,000 calls."

The study was based on telephone surveys of 602 users whose companies have sites with 300 or more personal computers. The total sample represented more than 600,000 PCs.

To better understand why the rate was growing at such a rapid pace, the study examined which virus types were responsible for the infections and their sources.

Overall, 63% of the sites have had at least one virus encounter (finding one virus either on a PC or a floppy disk), and 9% of all sites have experienced a virus disaster (an infection that affects 25 or more PCs).

Seventy-one percent of the virus disasters had occurred on PCs that were networked, and the likelihood of having a virus disaster increases with the level of networking, according to the study.

Two viruses — Stoned and Jerusalem — and their variants accounted for 90% of the infections. That was true despite the fact that the number of new viruses is growing at an estimated

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Unisys positions CTOS as APPC/LU 6.2 net gateway

Boosts ties to SNA nets through new software.

By Paul Desmond
Senior Editor

SAN JOSE, Calif. — Unisys Corp. next week is expected to announce new software that will give its CTOS workstations closer ties to IBM's Systems Network Architecture nets through enhanced support for SNA peer networking, electronic mail and net management.

Unisys will unveil a suite of products dubbed CTOS Client/Server SNA, including an enhanced software package that enables a single CTOS workstation to serve as an Advanced Program-to-Program Communications/LU 6.2 server for attached CTOS clients. The firm also plans to unveil gateways that link the CTOS-based E-mail system to IBM E-mail systems and enhancements that will give IBM's NetView net management system control over InControl, Unisys' management system for CTOS nets.

CTOS is a proprietary multitasking operating system geared for work group-based distributed computing in commercial nets.

"The strategy is basically to get into accounts that have IBM mainframes but are interested in using distributed platforms to leverage those mainframes," said John Rymer, vice-president with Patricia Seybold's Office Computing Group, a Boston consultancy.

CTOS has long had IBM connectivity through LU 2 support, 3270 emulation and APPC/LU 6.2 support. But the new APPC software will make it easier and less expensive to build APPC links between multiple workstations and a host by enabling a number of client workstations to share a single APPC session, Rymer said.

"With IBM's product offerings, if you're going to use APPC for a mainframe connection, you have to set up one session per user process," he said. "Unisys has come up with a way of multiplexing to let multiple users take advantage of one session."

Pricing for the new release was not available.

Unisys will also unveil a number of E-mail gateways between OFIS Mail, the CTOS E-mail system, and IBM E-mail packages, including the Professional Office System, as well as the VM, MVS and Application System/400 versions of OfficeVision, Rymer said. The gateways will include features that obviate the need for OFIS Mail users to know the exact addresses of IBM E-mail users.

The gateway products will consist of a combination of software packages priced between $6,000 and $12,000.

Additionally, Unisys will unveil CTOS SNA/NM Entry Point Services 1.0, which will let a NetView operator control the CTOS InControl management system from an IBM host. Today, NetView users can only monitor InControl alerts. The software will cost between $3,000 and $6,000.

Availability dates for the products could not be obtained.

Object definitions to ease integration of mgmt. tools

By Bob Brown and Paul Desmond
Network World Staff

BERNARDSVILLE, N.J. — The Network Management (NM) Forum early next year will establish a public library of network object definitions that could help speed development of interoperable net management systems, forum officials said last week.

Object definitions are logical representations of network devices and attributes and are used by management systems to control devices and attributes.

By providing a library of common object definitions for such devices as modems, routers and multiplexers, the forum is hoping to make it easier for vendors to develop integrated net management platforms and applications and spur greater interoperability among management products.

"If you don't have agreement at the managed object definition level, you really can't do much at the management applications level," said Beth Adams, NM Forum's managing director.

The forum also plans by early next year to offer a registration service under which it will assign unique identification numbers to object definitions developed by members and nonmembers. This system will ensure that objects are defined only once and that related objects are defined in a consistent manner. The forum will serve as a registration authority under the auspices of the International Standards Organization.

The forum is also working to develop a catalog that will list existing objects and object libraries. The catalog can be used by vendors and users to determine whether an object has already been defined and, if so, in what library it resides. It is hoped that

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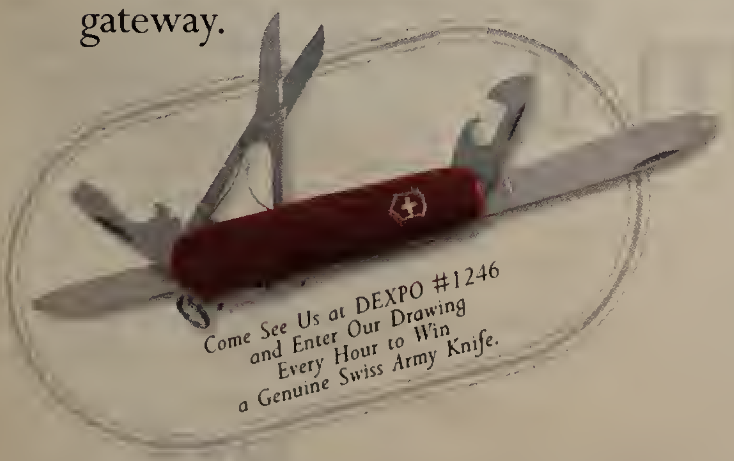

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AT&T asks to overturn ruling

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tions Co. focused on different aspects of the FCC's August decision, all predicted dire consequences if the agency fails to reconsider its ruling.

Concerns ranged from customers being unable to purchase 800 service in bundled arrangements, to AT&T's apparent inability to make changes to existing Tariff 12 deals and the possibility that the carrier can make changes to its new contract deals without customer approval.

Whichever clarifications or revisions the FCC might issue could significantly affect the way in which large users purchase services. If the FCC reverses itself and reinstates AT&T's ability to offer 800 service in custom network tariffs or contracts, that flexibility may not be applied equally to all users, leaving the matter to the courts.

If the FCC decides to bar other carriers from offering 800 service in packaged deals, customers would be unable to obtain inbound service in any new custom network arrangement from any carrier for at least the next 16 months. If the FCC retreats on its fresh look rule, customers could be locked into long-term 800 service purchases from AT&T, even after technology is in place that would allow them to switch to another carrier.

If the FCC upholds requests from competitors, AT&T would not be able to change its existing Tariff 12 deals for 16 months, which would block the carrier from selling existing Tariff 12 deals to additional customers.

In its petition last week, AT&T disputed the FCC's finding that it is dominant in the 800 services market and, therefore, should be banned from bundling 800 service into Tariff 12 and contract deals.

AT&T argued that even if it is dominant, the decision to bar bundling of all inbound services was "sweeping and irrational." AT&T said it has market power over only a small percentage of 800 customers — those with special toll-free numbers corresponding to words or phrases that they would lose if they switched carriers.

The committee also objected to the 800 bundling ban in its petition because "by forbidding AT&T from including inbound service in new Tariff 12 options, the commission has not only hindered, but perhaps halted, competition in the custom network marketplace."

Henry Levine, a Washington, D.C. attorney who represents Tariff 12 users, wants the ban lifted but said users can work around it. "[The ban] is foolish and a pain but not crippling," he said.

At the very least, the FCC should narrow the ban's scope, according to the users. The Ad Hoc Committee suggested that AT&T be allowed to offer 800 service in new Tariff 12 deals as long as 800 traffic accounts for less than 50% of the service mix.

Despite agreement on 800 bundling, the committee disagreed sharply with AT&T's efforts to have the FCC eliminate the fresh look rule, which gives customers the right to terminate a Tariff 12 deal without penalty and purchase service from another carrier after 800 numbers become portable. The rule was intended to prevent customers from being locked out of the 800 number portability advantages because they had long-term Tariff 12 deals.

AT&T argued that the FCC has no authority to change provisions of tariffs unless it finds one unlawful and conducts a public hearing to examine the issues involved. AT&T claims that the FCC did neither.

The Ad Hoc Committee also disagreed with AT&T on almost the reverse issue — a rule that allows AT&T to file tariff revisions that could nullify provisions in contract-based deals.

"The benefits of contract carriage to AT&T's customers depend centrally on the proposition that the service arrangements, rates, terms and conditions negotiated with such difficulty and cost will not be here today and gone tomorrow," the committee filing stated. ◘

FCC extends Tariff 12 grandfather clause

The Federal Communications Commission last week reversed an earlier ruling, in which it had said AT&T could not file Tariff 12 deals with 800 service after Aug. 1, by extending the cutoff date by one month.

The reversal would allow 15 new Tariff 12 deals with 800-service provisions to take effect, even though AT&T filed them a few days after the Aug. 1 cutoff.

Although many of the Tariff 12 customer identities were not disclosed, some users came forward to urge the FCC to grant a special exemption so their deals could take effect.

Among the 15 users are Northwest Airlines, Inc., United Air Lines, Inc. and Covia Partnership.

AT&T and users had argued that they were almost finished with their Tariff 12 deals but couldn't file paperwork in time to beat the Aug. 1 deadline. Some FCC commissioners were persuaded by this argument after intense lobbying from users and decided to change their stand on the cutoff date, according to sources.

Since AT&T was able to file the new deals only days after the Aug. 1 deadline, the FCC said it believed the carrier was near completion of the deals and just couldn't get the paperwork filed by the deadline. "Denying these customers the opportunity to reap the fruits of their negotiations would be unduly harsh and unfair," the order stated.

In August, the FCC had said that allowing the new deals to take effect after Aug. 1 would undermine the effectiveness of the 800 bundling restriction. Last week, the agency said it was in a better position to determine the effect of allowing the deals.

Since filing the 15 Tariff 12 deals, AT&T has withdrawn four of them. The remaining 11 deals are still pending FCC action.

— *Anita Taff*

National ISDN 1 ready for trial

continued from page 2

ware, while long-haul carriers will link the switches to form a permanent transcontinental ISDN network.

The network will support live ISDN applications that potential users can examine by visiting the project's participating companies.

"TRIP '92 embodies ISDN users exhibiting in an open-house fashion ISDN products and applications employed to solve real business requirements," according to Jim Jacobson, cochairman of the TRIP '92 organizing committee and an ISDN task manager with the Jet Propulsion Laboratory's Communications, Computing and Network Services Section.

"We're trying to stay away from the demonstration mentality. These applications will not be in special demo rooms and then packed away at the end of the open-house week," he said.

Organizers hope TRIP '92 will do for National ISDN 1 what the Enterprise Network Event (ENE) '88 did for open systems. ENE was designed to showcase interoperability of commercially available open systems products.

"TRIP '92 will be a big confidence builder for ISDN," said Jim Briggs, vice-chairman of the NIU Forum User Workshop and a senior engineer with Eastman Kodak Co. "It will show users that they can finally begin building far-reaching ISDN networks."

Jacobson said the group is seeking participation of the Big Three long-distance carriers as well as carriers outside of North America. AT&T, MCI Communications Corp., Bell Canada and British Telecommunications PLC have expressed interest.

The first phase

In Phase 1 of the project, the organizing committee asked members of COS and the NIU Forum to participate in TRIP '92 by sending letters describing the undertaking to each member company's chief executive officer. More than 170 respondents said they would like to take part.

Letters were also sent to the CEOs and presidents of local and interexchange carriers asking them to participate in or fund TRIP '92. Nine have pledged to help fund the effort.

The group last week sent out the rules of participation and a questionnaire that participants can use to explain their ISDN applications and list the equipment and services used.

These profiles will be compiled for use in a so-called ISDN atlas and cross-referenced by user location, application type, primary vendor and switch manufacturer. The atlas will also list a contact who can field questions about the implementation.

In Phase 2, a Bellcore-led task force will work with local and interexchange carriers here and in Canada to form a transcontinental ISDN network. They will upgrade switches near the highest concentrations of ISDN users. Richard Aloia, cochairman of the TRIP '92 organizing committee and Bellcore's ISDN product manager, said TRIP '92 hopes to have at least one node in each regional Bell holding company region.

As part of the final phase of TRIP '92, COS later this year will launch a nationwide advertising campaign designed to promote a special ISDN demonstration to be held Nov. 16-20, 1992, during its User's Open Systems Conference in Washington, D.C.

At this event, a network node in the Washington, D.C. area will be used to showcase ISDN applications that have a high general public interest. TRIP '92 organizers have not finalized plans for the exhibit. ◘

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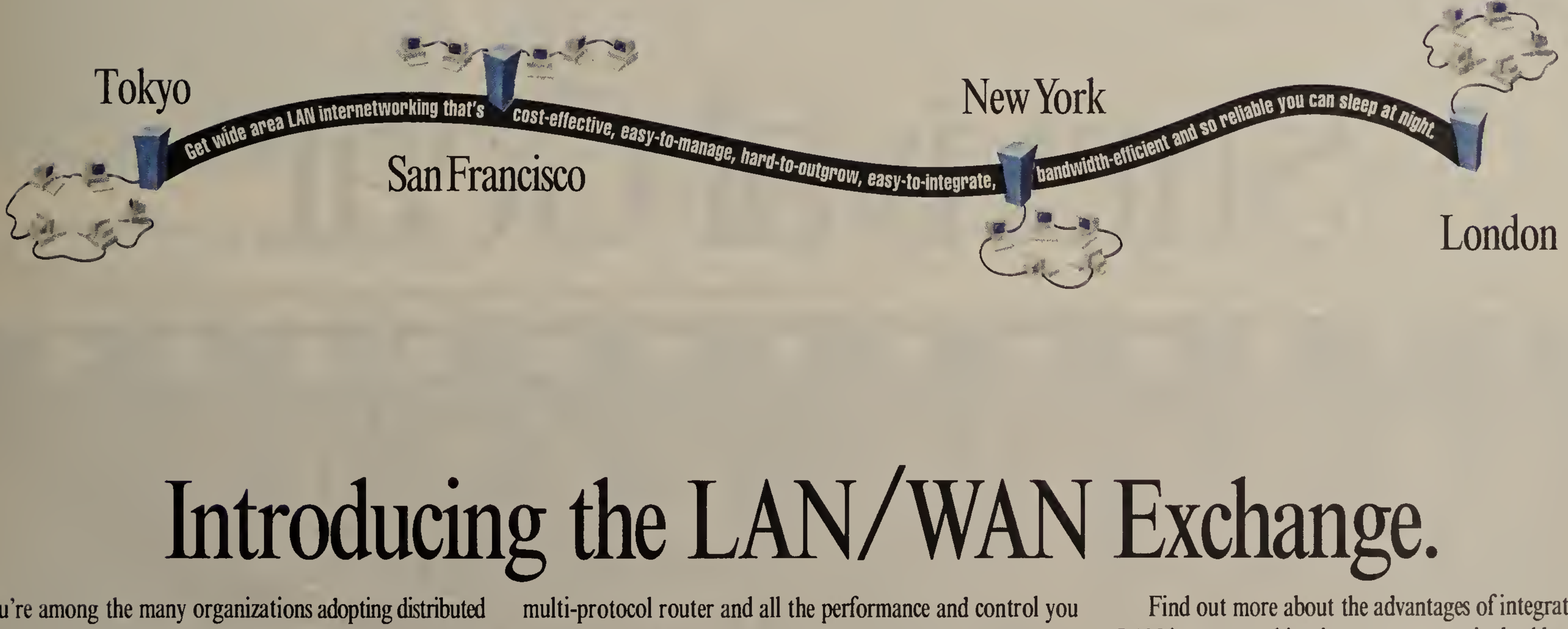

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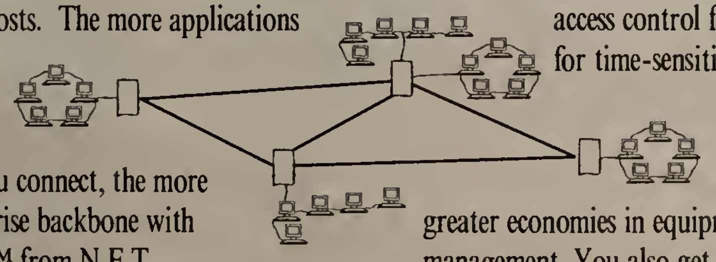

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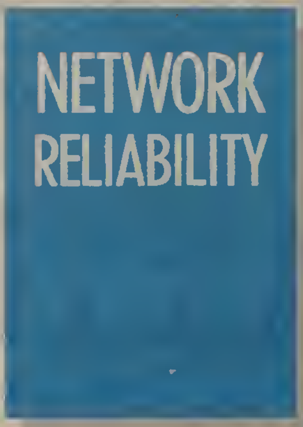

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

The telecommunications industry received the top rating for service quality in a recent cross-industry survey of chief executive officers and human resources vice-presidents. The study was conducted by Paul Ray & Carre Orban International, a consultancy in Fort Worth, Texas. About 83% of the survey respondents gave the telecommunications industry a favorable rating.

People & Positions

Nynex Corp. recently named **Eugene Sekulow** to the new position of executive vice-president — international for its Nynex Worldwide Services Group, Inc.

He will be responsible for coordinating Nynex's international business initiatives, identifying market opportunities and forging partnerships with other organizations.

Previously, Sekulow was president of Nynex International Co., a Nynex subsidiary that is being dissolved.

Mitel Corp., a Kanata, Ontario, private branch exchange maker, last week announced that **Edward Ohlschlager** has been named vice-president of North American sales operations and president of Mitel, Inc., the company's U.S. subsidiary.

Previously, he was president of Mitel Telephone System, Inc.

Ohlschlager takes the post of Thomas Mayer, who came to Mitel in February as a specialist with a mandate to reshape and consolidate the company's Canadian and U.S. sales and service groups.

Larse hatches plan to buy supplier of T-3 DSU/CSUs

Deal would provide customers with migration path.

By Bob Brown
Senior Editor

SANTA CLARA, Calif. — In an effort to expand into the T-3 market, Larse Corp. recently announced plans to acquire T3 Technologies, Inc., a maker of T-3 data service unit/channel service units (DSU/CSU).

Larse, a maker of T-1, E-1 and fractional T-1 DSU/CSUs, said rising customer demand for T-3 equipment convinced it to acquire the technology rather than develop such products on its own.

Larse, based here, declined to divulge financial terms of the agreement.

"We believe this acquisition will help us move away from being just a niche player in the marketplace to a company with a broad product line that company's can design their networks around," said Jim Mongiello, Larse's president.

T3 Technologies, which is based in Raleigh, N.C., and was founded in 1988, sells a T-3 DSU dubbed the Network Service Unit 45 and an E-1 DSU dubbed the Network Service Unit 34. The company also makes board-level interfaces for other vendors' T-3 and E-3 transmision products, token-ring local-area network extenders and high-speed bridge interfaces.

T3 Technologies recorded about $3 million in sales for fiscal year 1991.

Larse decided to buy T3 Technologies in light of a strategic marketing relationship that had been in place between the two companies for the past few years, Mongiello said.

Initially, Larse plans to operate T3 Technologies as a standalone company, Mongiello said. Larse's direct sales force will assume marketing for T3 Technologies' product line.

Meanwhile, both companies will work to integrate some of T3 Technologies' advancements into Larse's product line, Mongiello said. He declined to specify what types of products the companies plan to develop. However, he noted that Larse plans to provide support for the T3 Technologies products under its network management system.

Jennifer Pigg, an analyst at The Yankee Group, a market research firm in Boston, said the acquisition makes sense for Larse as a way for the company to differentiate itself in a commodity market. However, other DSU/CSU vendors are moving to support T-3, she added.

While the market for T-3 is not huge, Larse's support for the technology will at least enable the company to satisfy the needs of its installed base of customers who have growing high-bandwidth needs, Pigg said.

INDUSTRY BRIEFS

Nynex to take fourth-quarter write-off. Nynex Corp. last week said it will take a $550 million charge against earnings for its fiscal fourth quarter. William Ferguson, chairman and chief executive officer, said the write-offs, primarily related to work force reduction initiatives and business restructuring, were required to keep Nynex in a strong competitive position. Nynex will write off $395 million for costs related to an early retirement incentive plan finalized in September with local unions. Also, it plans to cut 1,900 positions from the current management staff of 32,000 by the end of the first-quarter 1992 and trim an additional 1,500 managers during the next two years.

Microlink gains manufacturing support. Bell Canada last week said 11 equipment manufacturing firms have agreed to support and promote Microlink, Bell Canada's Basic Rate Interface for Integrated Services Digital Network. They are: Adcom Electronics, Apple Canada, Ltd., AT&T Canada, Digital Equipment Corp., Gandalf Data, Ltd., GraF/X Systems, Inc., IBM Canada, Ltd., Motorola UDS, Inc., NCR Corp., Northern Telecom, Inc. and Seven Layers Communications, Inc. Microlink service is expected to begin in June, subject to regulatory approval.

(continued on page 10)

CrossComm Corp. at a glance

Based: Marlborough, Mass.
Founded: 1987
Financials: 1991 projected revenue of $20 million

Primary product lines:

☐ **ILAN bridge/router:** Supports token-ring, Ethernet, AT&T Starlan LANs, can route any LAN protocol and supports source route bridging for IBM SNA traffic.

☐ **High Speed Bridges:** Series of 4 bridges connect local or remote token-ring or Ethernet LANs.

☐ **ILAN Management System:** Manages ILAN and High Speed Bridge networks; supports the Simple Network Management Protocol, as well as IBM NetView and LAN Network Manager.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: CROSSCOMM, MARLBOROUGH

Token-ring strategy wins for CrossComm

Analysts announce firm well positioned to take advantage of predicted token-ring LAN growth.

By Paul Desmond
Senior Editor

WESTBOROUGH, Mass. — When CrossComm Corp. was founded four years ago, the company set its sights on the token-ring internetworking market, a strategy that has positioned the company to profit from the migration of SNA users to token rings and the rapid growth expected for that market.

Sales of Ethernet internetwork devices have provided tremendous growth for vendors such as Cisco Systems, Inc. and Wellfleet Communications, Inc. Now, according to analysts, the token-ring interconnect market is poised to take off as well.

International Data Corp., a research company in Framingham, Mass., predicts that by 1995, the number of installed token-ring interface boards will be about two-thirds that of Ethernet boards. Today, there are only about half as many token-ring boards installed as Ethernet. Other analysts predict the gap to be even closer by 1995.

That is what CrossComm was banking on when it was founded in 1987, said Tad Witkowicz, president and founder of the company, based here.

"We are the only independent vendor of internetworking products targeted solely at token ring," Witkowicz said, noting that the company's ILAN bridge/router also supports Ethernet simply because it is such a pervasive local-area network standard.

The company has been quietly successful since 1988, enjoying 100% growth in sales annually since then and a string of 16 consecutive profitable quarters, he said. Profits have grown at a rate averaging about 20% to 25% per quarter during that same period, and the company is projecting revenue of about $20 million this year (see graphic, this page).

CrossComm's target customers are IBM Systems Network Architecture users seeking to migrate SNA devices to token-ring LANs. Its biggest competitor to date has been IBM, which owns about 75% of the market for token-ring bridges, Witkowicz said.

Tad Witkowicz

He claims that the ILAN is much simpler to use than IBM's Personal System/2-based bridge program and can support more LANs. "The ILAN can replace three IBM PS/2 bridges," he said.

Nick Lippis, a principal with Strategic Networks Consulting, Inc. in Rockland, Mass., agreed. "They run circles around IBM's internetworking products, like

(continued on page 10)

Industry Briefs

continued from page 9

NIST office to open. Robert White, Department of Commerce undersecretary for technology, last week announced the establishment of a new office at the National Institute of Standards and Technology to coordinate U.S. government involvement in national and international efforts by industry to develop the Product Data Exchange Specification.

Under the Commerce Department's National Initiative for Product Data Exchange, industry and trade associations as well as corporations will assign or fund full-time members or pay office expenses.

Token-ring wins for CrossComm

continued from page 9

everyone else does, in terms of price, performance, functionality and features," he said.

Because of its token-ring focus, CrossComm has to specialize in supporting nonroutable protocols such as SNA. Ethernet, on the other hand, typically carries more routable protocols such as the Transmission Control Protocol/Internet Protocol and Digital Equipment Corp.'s DECnet.

Until now, CrossComm has supported nonroutable protocols primarily through bridging standards such as source route bridging, which means the ILAN might be most accurately described as a bridge, not a router. However, the company disputes that classification, claiming the ILAN can do anything a traditional router can do when it comes to token ring.

Enhancements on tap for early next year will help clarify the product's positioning ("ILAN's new algorithm is boon to SNA," *NW*, Nov. 11).

CrossComm is developing a new routing algorithm based on the Shortest Path First family that will give the ILAN the ability to reroute traffic around failed nodes or links much faster than is currently possible using source route bridging.

Support for the algorithm will give the ILAN what CrossComm calls protocol-independent routing — the ability to use the same routing technique for any protocol. That will obviate the need for adding a protocol stack with each new protocol it wants to support.

CrossComm's new algorithm will also enable the device to overcome many of the shortcomings of source routing, including its inability to choose an alternate path in the event a primary route becomes congested.

Additionally, sources said the firm will add a frame relay interface to the ILAN, which will speed data through the network and improve bandwidth utilization.

> "Routing gives you at least three tangible benefits that you don't get with bridging."
>
> ▲▲▲

According to Anura Guruge, lead consultant with BBN Communications Corp., a consultancy in Cambridge, Mass., such enhancements will place the ILAN squarely in the router category.

"The difference between bridging and routing is routing gives you at least three tangible benefits that you don't get with bridging — elimination of broadcast storms, adaptive routing and dynamic alternate routing," Guruge said.

Such improvements will be good news to CrossComm's SNA user base because it means the ILAN should be able to route around failures fast enough to preserve users' host sessions.

If the company is lacking in any area, it may be service and support. With only 100 employees, CrossComm cannot claim a vast support staff. However, Lippis said the company does offer a management feature that allows alert data to be sent to a CrossComm technical center that is staffed around the clock.

"I don't think that's unique, but it's good for a small company like this," he said.

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Joe Walter
Vice-president of
strategic planning
The Chase Manhattan
Bank, N.A.
Telecommunications division
Discussing the New York plan
requiring public network providers
to back up one another in the
event of a major outage.

Carrier Watch

Indiana Bell Telephone Co. recently said it teamed with Smithville Telephone Co. to activate a fiber-optic ring network that provides extra protection against service outages for four of the state's southern communities.

In what Indiana Bell bills as one of the first joint ventures of its kind, the telephone companies installed electronic equipment and 30 route miles of fiber-optic cable to connect the communities of Bloomington, Ellettsville, Smithville and Stanford. Indiana Bell provides 57,000 lines in Bloomington, while Smithville Telephone provides 15,500 total lines in the three other communities.

Voice traffic can travel in either direction around the ring. If the cable is severed, traffic can be rerouted in the opposite direction.

In a separate announcement, Indiana Bell said it will provide digital Centrex service to *The South Bend Tribune*. As part of a five-year contract, the carrier will provide the newspaper with about 300 lines of Ameritech's Digital Centrex to replace an AT&T Dimension 400 analog private branch exchange.

Under the agreement, Indi-

(continued on page 14)

AT&T's Allen lashes out at the regulatory process, FCC

Carrier exec says regulatory restraints are failing.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — AT&T Chairman Robert Allen recently criticized regulators for taking too long to give the carrier more marketing flexibility, saying the industry is wasting resources fighting legal battles.

"There is a vast and growing market developing for global telecommunications services. Corporations will increasingly depend on those services," Allen told attendess at a recent meeting here of the Federal Communications Bar Association, which represents attorneys specializing in communications issues.

"The long-distance industry in the U.S. can be the world leader in providing [those services] if the regulatory process will get the hell out of the way," Allen said.

For example, Allen said he was disappointed with decisions issued by the FCC in August that judged AT&T to be dominant in the 800 services market and barred the carrier from offering those services in either Tariff 12 or contract deals until those numbers are made portable.

"The long-distance market is too competitive to be dominated by any one carrier now or in the future, and regulatory policy should reflect that," Allen said.

Also in August, the FCC declared AT&T's Tariff 15 customer-specific discount plans unlawful. Referring to both the Tariff 15 and 800 decisions, Allen said, "Customer benefits went up against competitor protection — and customers lost.

"There is no longer a reason for telecommunications services to be doled out in terms of tariff filings and [price cap] service baskets," he said. "I'd like to get rid of regulation altogether, but I know that's not realistic."

Allen said AT&T's decision to offer its new frame relay service through contracts rather than on a tariff basis is not the beginning of a trend.

But he added that most of the growth in new service will be in the data area, which is generally not regulated by the FCC.

(continued on page 14)

WASHINGTON UPDATE

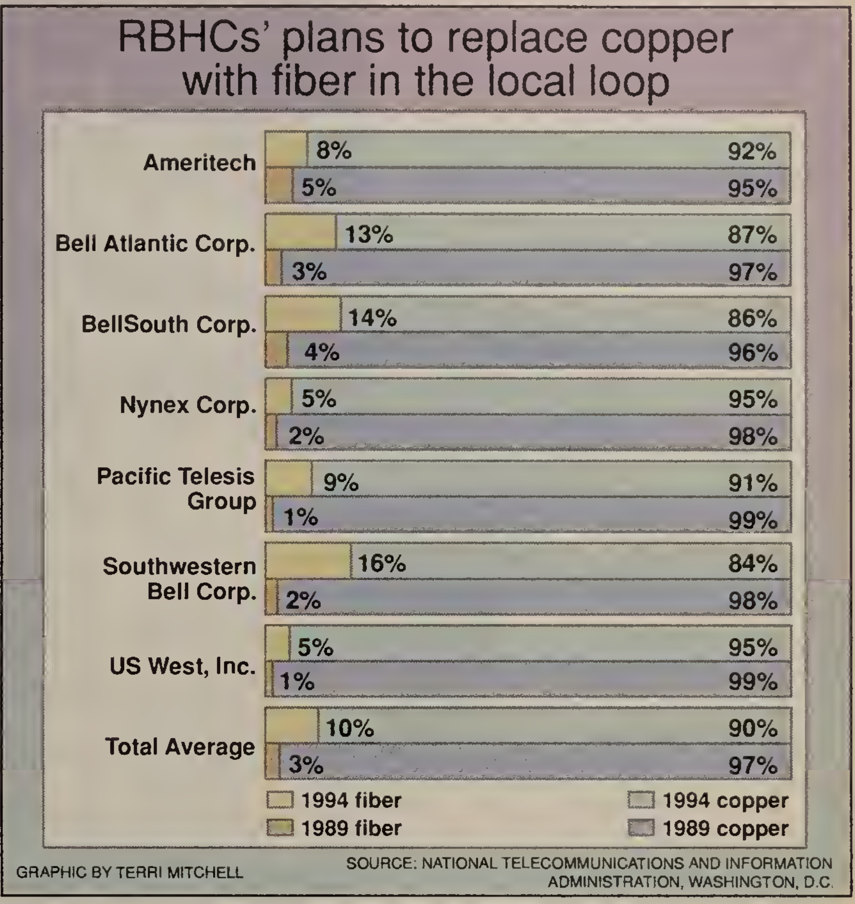
FCC makes decision on Tariff 12. The Federal Communications Commission recently released its order declaring Tariff 12 deals legal, clearing the way for AT&T's future Tariff 12 filings to be processed on a streamlined basis. This means that AT&T is only required to give 14 days' notice instead of the previous 45 days when filing deals. It also means that the carrier is no longer required to file cost support data and that its deals are presumed to be lawful until proven otherwise by protesters.

The FCC decided in August that most of AT&T's business services are competitive enough to relax restrictions on the carrier. At that time, the FCC tentatively said Tariff 12 should receive relaxed regulatory treatment pending an investigation into the basic legality of the deals. In October, the FCC completed a court-ordered reinvestigation of Tariff 12 and found the custom deals to be lawful.

Last week, AT&T also got the green light to begin offering contract-based deals instead of services based on tariffs. The FCC decided in August that AT&T should have the flexibility to offer custom deals through a hybrid contract/tariff arrangement but, due to procedural requirements, the carrier was not allowed to start offering contracts until last Monday.

Although AT&T had not filed any of these new contract deals by press time, observers said the carrier has a number of them in the works and they should be filed shortly.

Henry Levine, a Washington, D.C. attorney who counsels large customers on telecommunications purchases, said he is currently working with clients who are negotiating contract deals with AT&T. Levine said he expects some of the contracts to be filed before the end of the year. The only snag would be if AT&T is unable to set up the administrative procedures necessary to handle the new deals, he said. ◻



GRAPHIC BY TERRI MITCHELL

SOURCE: NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, WASHINGTON, D.C.

Feasibility of fiber to the home disputed

Experts cite higher costs and lower benefits as possible fallout of plan to bring fiber to doorstep.

By Anita Taff
Washington Bureau Chief

WASHINGTON, D.C. — A panel of telecommunications experts meeting here recently said the costs may be higher and the benefits lower than previously expected for local carriers installing fiber-optic cable to customers' doorsteps.

During a symposium sponsored by the Annenberg Washington Program, Northwestern University's communications policy institute, speakers presented evidence that the cost of installing fiber to every user may be twice as much as earlier estimates. They also shared reservations about settling on fiber when other technologies might do the job just as well.

Additionally, the panel of academic, research and legal experts virtually all agreed that the proposed benefits of converting the nation's public network from copper to fiber have been overblown.

Those sentiments may serve to further fuel fears of some user groups that have already spoken out against ubiquitous fiber installation. Most of the applications that would justify adding fiber to the local loop are targeted at residential users, such as new types of entertainment services.

Businesses would benefit from better service quality and reliability, particularly for smaller locations, but users question whether the upgrade is necessary and fear policymakers will saddle businesses with a disproportionate share of the upgrade cost.

Local carriers have generated publicity for their proposals to implement fiber in the local loop by saying citizens are being cut off from a range of educational and health care services because the current network infrastructure cannot support these applications. The carriers also claim that the U.S. is falling seriously behind in providing the infrastructure necessary for businesses to stay competitive with other countries.

Henry Geller, a senior fellow with the Annenberg Program and former general counsel for the Federal Communications Commission, agreed that new residential and business applications are being held up by a lack of local network capacity. As an example, he pointed to broadband and multimedia computer applications under development.

"These computers have to be linked to be useful," he said.

Many of the regional Bell holding companies insist that fiber is the only reasonable way to provide high-bandwidth interactive services, but they have widely varying installation plans (see graphic, this page).

One problem is cost. Cost estimates for providing fiber to the doorstep range from $200 billion

(continued on page 14)

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So now that server technology has taken three steps forward, perhaps you should take a step toward the phone. Just call us at (800) 426-5321 ext. 300, and we'll rush you more information about the new SPARCserver 600MP Series.

They're going fast. And faster. And soon, even faster.

sun
microsystems

• SunSoft, Inc.'s Solaris 2.0 is scheduled for release in the first half of 1992

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Today

This is Sun's fastest, most expandable family of servers ever – the new SPARCserver 600MP Series. Performance you'd expect from a multiprocessor server, at prices you'd expect from Sun.

Tomorrow

For heavier workloads and more users, plug in this SPARC module and you've upgraded from two CPUs to four. Because you don't buy an entire system board, you don't spend a fortune.

Soon

*The next generation of UNIX servers will yield even more powerful capabilities with the arrival of the next generation of client-server system software.**

Feasibility of fiber to the home disputed

continued from page 11

to $600 billion. But Bruce Egan, an affiliated research fellow at the Columbia Institute for Tele-Information, part of Columbia University in New York, said the cost could be closer to $1 trillion.

Egan conducted a comparative analysis of various technologies and service levels, which concluded that installing fiber to user sites for traditional telephone service alone would cost $3,000 per site, a figure that could drop to $1,000 per site after the turn of the century.

Since there are about 95 million households in the U.S., the cost of installing fiber to all residential users, even at this lower price, would be $95 billion.

By comparison, Egan estimated that the cost of wireless technologies such as personal communications network (PCN) services would be between $300 and $500 per site, direct broadcast satellite (DBS) would cost $300 to $800 per site and multipoint distribution service — currently a one-way radio service delivered over microwave — would cost about $500 per site for high-quality traditional telephone service.

Leland Johnson, a senior economist with Rand Corp., a think tank in Santa Monica, Calif., agreed that technologies other than fiber could be used. He said there have been striking breakthroughs in video compression that could enable carriers to offer wideband applications on narrower band technologies such as PCN or DBS.

Besides, Johnson said, it is unclear just how much bandwidth really should be delivered to homes since there are serious questions about market demand for wideband services. Developing the software and interfaces necessary to support those services may also be a problem.

"I'm bothered by the debate that somehow the use of fiber to the home will revolutionize the way society gets information," Johnson said.

He downplayed the idea that serving all users with fiber drops will improve the competitiveness of the U.S. Johnson labeled such suggestions as "a search for a technology magic bullet. One technology won't make a difference in the global competitiveness [of the U.S.]," he said.

Philip Verveer, a communications attorney with the Washington, D.C. law firm of Wilkie, Farr & Gallagher and a former head of the FCC's Common Carrier Bureau, agreed that "the public benefits [of installing fiber to all user sites] is very seriously overblown."

Verveer said there are substantial costs not only in the expense of upgrading to fiber, but also in trying to get the government to pick a technology for the nation's network.

Some vendor's maintenance coverage area for VSAT services is full of holes.

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AT&T Tridom

AT&T's Allen lashes out at the FCC

continued from page 11

Allen also said that he welcomed free and unfettered competition for AT&T but felt it was too soon to turn the regional Bell holding companies loose in new business areas. The carrier has vocally opposed RBHC entry into manufacturing and long-distance services.

Allen claimed that no matter what safeguards legislators or regulators devise to prevent RBHC anticompetitive behavior, they will not work.

"I think we can take a lesson from history," Allen said. "In the old Bell System days, we were awash in regulatory oversight. But all those regulatory requirements didn't prevent us from buying the overwhelming majority of our equipment from our in-house supplier."

AT&T fears that the RBHCs might purchase equipment only from themselves, driving competitors, such as AT&T's manufacturing arm, out of business.

"Take it from somebody who's been there," Allen said, "regulatory restraints don't work."

Carrier Watch

continued from page 11

ana Bell will provide Centrex from an AT&T Network Systems group 5ESS digital central office switch. The newspaper chose Ameritech Digital Centrex over an AT&T Definity Generic 1 PBX.

City Signal, Inc., a Grand Rapids, Mich.-based company, last week announced plans to build a multimillion-dollar fiber-optic network that will offer users in the Michigan counties of Macomb, Oakland and Wayne an alternative to Michigan Bell Telephone Co. for private-line and alternate access services. City Signal said the planned 150-route-mile fiber network will be among the largest and most advanced metropolitan-area networks in the U.S.

The company patterned the net after its Grand Rapids network, which serves more than 120 western Michigan locations.

City Signal will use some of the net's capacity to establish a two-way interactive video network that will deliver broadcast-quality video signals to area organizations.

The video network will enable companies to communicate with other local organizations, area educational facilities and satellite-based teleconferencing networks. City Signal expects to complete construction of its fiber net in the spring.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

According to John Rose, vice-president of Digital Equipment Corp.'s Personal Computing Systems Group, there are 18 million personal computers in DEC's VAX customer base, 84% of which are based on Intel Corp. processors, with the rest being Apple Computer, Inc. Macintoshes. Twenty-five percent of those desktop machines are integrated in client/server environments.

Data Packets

Officials from the **National Institute of Standards and Technology** said recent discussions held with the **Network Management Forum** on the subject of merging their two Open Systems Interconnection network management profiles were productive but did not result in an agreement. However, the two organizations plan to meet again in January in the hopes that a merger of the two specs can be achieved before next spring, when both are scheduled to be released.

AT&T Tridom recently announced that its Clearlink Network Control System, the management system for its Clearlink Very Small Aperture Terminal networks, has been enhanced to work with AT&T's Accumaster Integrator and IBM's NetView network management systems.

Users of either integrated net management system can now monitor Clearlink VSAT nets from the Integrator and NetView consoles. Integrator users can also employ termi-

(continued on page 18)

EPRI to issue spec to ensure database interoperability

Spec would be addition to open net architecture.

By Ellen Messmer
Washington Correspondent

RESTON, Va. — The Electric Power Research Institute (EPRI) recently disclosed plans to issue by year end a specification that defines a common method to ensure interoperability among relational database management systems used by utilities.

The specification would enhance EPRI's Utility Communications Architecture, an Open Systems Interconnection-based architecture for utilities networks. The spec would ensure users that databases used in business operations, power generation facilities, Supervisory Control and Data Acquisition systems, and utility substations could share data.

EPRI's Database Access Integration Services (DAIS) specification is based on two emerging International Standards Organization standards: Remote Data Access (RDA) and SQL2.

Initially, EPRI plans to base DAIS 1.0 largely on specifications being developed by the SQL Access Group, a vendor organization whose three dozen members include Digital Equipment Corp., Lotus Development Corp., Microsoft Corp., Oracle Corp. and Sybase Corp.

"In the long term, we want DAIS converged with the RDA and SQL2 standards," said James Richards, head of the DAIS project team and senior staff engineer at Honeywell, Inc. "In the meantime, we are specifying the SQL Access group specification as a first layer of conformance. It doesn't meet all our requirements, but it's a starting point."

According to Richards, EPRI is working with Minneapolis-based Northern States Power Co. to establish user requirements and techniques for uniform database access.

"Are there products on the market now? Are there standards that meet our requirements?" Richards asked. "The answer is no."

(continued on page 19)

DEC broadens LAN, client support in All-In-1 package

By Jim Duffy
Senior Editor

MAYNARD, Mass. — Digital Equipment Corp. recently rolled out new versions of its All-In-1 office automation software that extends work group computing capabilities to users on various client workstations and local-area networks.

DEC rearchitected All-In-1 Integrated Office System (IOS) Server to run in a client/server environment. Version 3 of All-In-1 IOS Server provides global, distributed file sharing and support for DEC TeamLinks for Pathworks, as well as All-In-1 DESKtop for Macintosh and DOS client software.

TeamLinks for Pathworks is work group computing software for Microsoft Corp. Windows client workstations on DEC Pathworks LANs that brings those desktops into the enterprisewide All-In-1 office environment ("DEC, Microsoft team on Windows initiative," *NW*, Nov. 25).

All-In-1 DESKtop for Macintosh, which also debuted recently, and DESKtop for DOS incorporate Apple Computer, Inc. Macintosh clients and DOS personal computers into All-In-1.

All-In-1 IOS Server Version 3, which resides on DEC VAX/VMS systems and works with All-In-1 client packages, can also define work groups so users share files and electronic mail and gain authorized access to data.

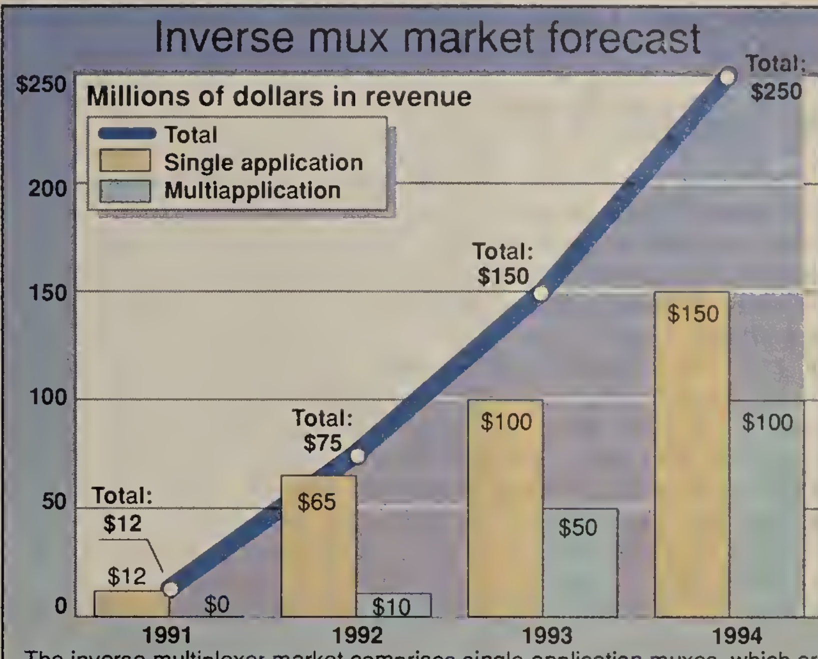
> Version 3 allows users to share the contents of individual or multiple documents.
>
> ▲▲▲

Version 3 allows users to share the contents of individual or multiple documents with other users or work groups. Users can work on these documents collaboratively without multiple versions of the same document circulating simultaneously around the network.

Version 3 lets users edit as many as 10 documents at a

(continued on page 18)

Inverse mux market forecast



The inverse multiplexer market comprises single-application muxes, which are designed to support 1 application per mux, and multiapplication muxes, which support more than 1 application per mux.

GRAPHIC BY SUSAN J. CHAMPENY — SOURCE: THE YANKEE GROUP, BOSTON

Inverse muxes evolve to meet users' needs

Vendors begin rollout of more efficient models that support several applications simultaneously.

By Bob Brown
Senior Editor

Bowing to user demands, makers of inverse multiplexers are beginning to offer a new generation of their products that are capable of supporting several applications simultaneously.

The arrival of new, multipurpose inverse muxes will give users greater economies of scale by using a single unit instead of several to support different applications, as well as enabling users to make more efficient use of dedicated bandwidth to local carriers.

Inverse muxes are devices designed to let users take advantage of the new array of switched carrier services. The muxes are used to signal a carrier to establish multiple 56K and 64K bit/sec calls on an as-needed basis. The inverse mux then pools the bandwidth into a single contiguous pipe to support such high-bandwidth applications as videoconferencing and local-area network interconnection.

"There is a growing awareness in the market of switched digital services and the existence of inverse mux CPE," said Jennifer Pigg, an analyst at The Yankee Group, a market research firm in Boston that recently issued a report on inverse muxes. "That's leading to customer demand for CPE that will support a number of applications simultaneously. From a bandwidth management view, multiapplication inverse muxes can be a boon to users."

Leading inverse mux makers, such as Ascend Communications, Inc. and Digital Access Corp., built their business by selling inverse muxes dedicated to single applications. Both of these vendors have focused primarily on selling inverse muxes to link videoconferencing coder/decoders to the public network.

But Jay Duncanson, a cofounder and product manager at Ascend, said the San Francisco-based firm will refocus its product direction to include an emphasis on inverse muxes that support multiple applications. He declined to reveal details about any forthcoming products, however.

"I think what we're going to see as we move forward into this new switched services marketplace is a combination of single- and multiple-application access devices," Duncanson said. "For instance, we can expect over the next few years that desktop videoconferencing will be a reality, and, in that case, you'll need a [stand-alone inverse mux] device on every desktop to give them switched service access."

On the other hand, he said, there will be demand for multipurpose inverse muxes on a systems-level basis to connect to a rack of bridges or routers supporting various applications.

"It's logical to assume that everybody who is going to play in this marketplace will be supporting both the system-level products and stand-alone type products," Duncanson added.

The Yankee Group estimated that the inverse mux market will grow from $12 million this year to $250 million by 1994. During

(continued on page 18)

Advertisement

CONFERENCE UPDATE

Learn about it FIRST at ComNet

Whether you're a newcomer, or a seasoned veteran, from front-line management to the highest executive offices, **ComNet '92** offers proven, cost-effective solutions to your most critical networking problems. Practical information, in a variety of learning formats, empowers you with the knowledge to make the most of your network potential now while planning for tomorrow's challenges.

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Special events at ComNet '92

1. Keynote Address: *"National Information Infrastructure: Now is the Time!"* presented by **George Heilmeier,** President, Bell Communications Research, Wed., Jan. 29, 9:30 am-10:30 am **FREE to all attendees**

2. Keynote Presentation: *"Frame Relay and SMDS: New Standards for LAN Interconnection,"* chaired by **John M. McQuillan,** President, McQuillan Consulting, with **George Wayne,** President, SMDS Interest Group and **Tom Jones,** President, Frame Relay Forum, Thur., Jan. 30, 9:30 am-10:30 am **FREE to all attendees**

3. Plenary Session: *"Europe 1992: Nations and Networks,"* featuring **Dr. Herbert Ungerer,** Division Head, Directorate General for Telecommunications, Commission of European Communities, Thur., Jan. 30, 2:15 pm-3:30 pm (Part I) and 3:45 pm-5:00 pm (Part II) **Open to Conference registrants only**

4. Annual ComNet Town Meeting: *"The Local Exchange: The New Competitive Frontier?"* moderated by **Richard E. Wiley,** Senior Partner, Wiley, Rein & Fielding, Wed., Jan. 29, 2:15 pm-4:00 pm **Open to Conference registrants only**

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Two-Day Tutorials

Monday, January 27 and
Tuesday, January 28
9:00 am-5:00 pm

T-A
The New Network Design Paradigm
Instructor: **Gary Audin,** President, Delphi, Inc.

T-B
Internetworking Design and Troubleshooting
Instructor: **Mark Miller, P.E.,** President, DigiNet Corp.

T-C
Network Management
Instructor: **Kornel Terplan, Ph.D.,** President, Performance Navigation, Inc.

T-D
The TCP/IP Protocol Suite
Instructor: **Eugene Pinsky, Ph.D.,** Computer Science Dept., Boston University

T-E
FDDI (Fiber Distributed Data Interface): Concepts & Facilities
Instructor: **Wayne Ward,** President, Technology Symposium, Inc.

One-Day Tutorials

Monday, January 27
9:00 am-5:00 pm

T1.1
Broadband Internetworking: Part I
Instructor: **John McQuillan, Ph.D.,** President, McQuillan Consulting

T1.3
Application Planning for Cooperative Processing with Advanced IBM and Multi-Vendor Architectures
Instructor: **Atul Kapoor,** Vice President, Kaptronix, Inc.

T1.4
Using Object Technology in Networked Systems Development
Instructor: **John Rymer,** Vice President, Patricia Seybold's Office Computing Group, and Editor-in-Chief, *The Network Monitor*

T1.5
Desktop Visual Communication in the 90s: Applications, Standards, Silicon and Networks
Instructor: **Richard Baker, Ph.D.,** Research Director, PictureTel Corp.

T1.6
Design and Operation of T1 and T3 Networks
Instructor: **Steven Taylor,** President, Distributed Networking Association and Technical Editor, *Networking Management* Magazine

T1.7
Introduction to Telecom Networking
Instructor: **Lillian Goleniewski,** President, The LIDO Organization

T1.8
Wireless LAN
Instructor: **Kaveh Pahlavan, Ph.D.,** Professor and Director of the Center for Wireless Information Network Studies, Worcester Polytechnic Institute

Tuesday, January 28
9:00 am-5:00 pm

T2.1
Broadband Internetworking: Part II
Instructor: **Tom L. Nolle,** President, CIMI Corporation

T2.2
Network Servers and Operating Systems
Instructor: **J. Scott Haugdahl,** Senior Technical Consultant, Architecture Technology Corporation

T2.3
Application Connectivity Planning and Design for IBM Token-Ring Networks
Instructor: **Doug O'Hearen,** Vice President of Technical Staff, Kaptronix Inc.

SESSIONS SCHEDULE-AT-A-GLANCE

	Track / Time	PUBLIC NETWORKING					INTERNETWORKING	NETWORK COMPUTING		
		1 – Rebuilding the Public Network	**2 – Making Sense of Policy and Regulations**	**3 – Issues and Trends in Network Operations and Management**	**4 – Planning and Designing Global Networks**	**5 – Advanced Networks**	**6 – Building the Enterprise Internet**	**7 – Getting Started in Cooperative Processing**	**8 – LAN Architecture and Design**	**9 – Managing and Optimizing LANs**
WEDNESDAY, JANUARY 29	8:00 am - 9:15 am	Status Report on Digital Upgrade and Conversion of the Telephone Company Infrastructure		Integrated Network Management Systems: Product Update and Analysis		Please Explain Wireless Networks	FDDI Update	Please Explain Client-Server Environments	Broadband Internetworking	
	9:30 am - 10:30 am	**Keynote Address: "National Information Infrastructure: Now is the Time" George H. Heilmeier, Ph.D., President and CEO, Bell Communications Research, Inc.**								
	10:45 am - 12:00 pm	National ISDN: What's Ahead?	Washington Scene	Outsourcing the Network: Opportunities and Pitfalls	Will Global Standards Ever Be Truly Global?	Personal Communications Via Low Earth Orbit Satellites	High Performance Multi-Protocol Routers	SNMP: Making the Standard Work in Today's Heterogeneous Networks	Wireless Token-Ring LAN: An Alternative for Growth	Evaluation of LAN Network Management: Strategies and Concepts
	12:45 pm - 2:00 pm	Market Analysis of Fiber Based High Bandwidth Telephone Company Offerings	Wireless Networks: Policy and Regulation	The Integrated Network Management Experience: Panel of Users	Pacific Rim	Videoconferencing: The Race to the Desktop	SMDS Survey	Multi-Vendor Cooperative Processing: Is It Possible?		
	2:15 pm - 3:30 pm		**Town Meeting: The Local Exchange: The New Competitive Frontier? 2:15 pm - 4:00 pm**	The Future of the Private Networks: Integrating Switched Broadband Services into the Corporate Network	Packet Networks Internationally	National Data Super Highway	Enterprise Mail Systems: Linking LANs, Mainframes and Public Services		What's New in LAN Hubs? (Part I)	Product Review and Analysis: LAN Operations and Control Systems
	3:45 pm - 5:00 pm	The Status of U.S. and Global Virtual Network Services		Sorting Out Network and Systems Element Managers			Cell Relay: Prospects and Possibilities		What's New in LAN Hubs? (Part II)	High Bandwidth Applications on LANs: Analyzing Performance Issues
THURSDAY, JANUARY 30	8:00 am - 9:15 am	Frame/Cell Relay Plans on the Public Network		Understanding the Impact of Bursty High Bandwidth Applications	Case Study: Networking with International Customers and Suppliers	Cellular as an Alternative in Fixed Applications	Routing SNA and LAN Traffic	Migrating Toward Client-Server Computing	Comparing LAN Open System Choices	
	9:30 am - 10:30 am	**Keynote Presentation: "Frame Relay and SMDS: New Standards for LAN Interconnection" Dr. John McQuillan, President, McQuillan Consulting**								
	10:45 am - 12:00 pm	Customer Controlled Intelligent Public Networks	The RBOC Future: MFJ, Legislative, Regulatory	Network Design and Modeling Tools: Product Update and Analysis	Global Network Management	Digital Cellular			Collapsing Parallel Data Networks	
	12:45 pm - 2:00 pm	Broadband ISDN: An Update	The Interlata Marketplace: Domination or Competition?		Mexico: Impact of Privatization and Free Trade Zone	Automatic Speech Recognition for Interactive Voice Response Systems Users	Internetwork Management	User Experiences in Implementing Integrated Networks and Applications		
	2:15 pm - 3:30 pm	Uniform Service and Pricing Structures: Are They Necessary?	Spectrum: Limited Resource, Unlimited Demand	Traffic Analysis and Performance Monitoring: Product Update and Analysis	Plenary Session Europe 1992 (Part I) Nations and Networks	Voice Recognition Products: Adding Another Sense to Computer Communications	Frame Relay Round-up (Part 1)		Evaluation of Intelligent Wiring	Help Desk
	3:45 pm - 5:00 pm				Europe 1992 (Part II) Nations and Networks		Frame Relay Round-up (Part II)			

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2.4
.400 and X.500 International tandards for Mail and Directories
structor: **Gregory Loux,** Director of dvanced Products, Soft-Switch, Inc.

2.5
etwork Power: Secrets of Successl Network Management
structor: **Howard Frank,** President, oward Frank Associates

2.6
SDN Will Be Ready in June, 1992. Vill You?
structor: **Michael F. Finneran,** resident, dBm Associates, Inc.

T2.7
Understanding and Selecting International Public Network Service
Instructor: **Daniel Briere,** President, TeleChoice, Inc.

T2.8
IBM Network Strategy and Product Critique
Instructor: **Atul Kapoor,** VP, Kaptronix Inc. and **Jack Baney,** Manager, IBM Networking Systems

T2.9
Standards for Network Computing
Instructor: **L. David Passmore,** Partner, Ernst & Young

10 – LAN Applications	Track Time	
LAN Applications: Where Are They Going?	8:00 am - 9:15 am	WEDNESDAY, JANUARY 29
	9:30 am - 10:30 am	
Networking Windows 3.0	10:45 am - 12:00 pm	
Groupware, An Idea Whose Time Is Now	12:45 pm - 2:00 pm	
	2:15 pm - 3:30 pm	
	3:45 pm - 5:00 pm	
Security and LAN Applications	8:00 am - 9:15 am	THURSDAY, JANUARY 30
	9:30 am - 10:30 am	
mage Documents and ext Retrieval on LANs	10:45 am - 12:00 pm	
	12:45 pm - 2:00 pm	
	2:15 pm - 3:30 pm	
	3:45 pm - 5:00 pm	

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Monday, January 27 9:00 am - 5:15 pm
Tuesday, January 28 8:45 am - 1:45 pm

Highlights:

Monday

Kickoff Presentation: "**Competitive Advantage 2000,**" presented by **Jim Jewett, Ph.D.,** CEO, Jewett & Associates, Inc. – 9:15 am - 10:15 am

Keynote Luncheon Presentation: "**High Payoff Networking Strategies for the 90s,**" chaired by **Dixon Doll,** Chairman and CEO, DMW Group Inc. – 12:15 pm - 1:45 pm

Featured Presentation: "**Achieving Total Quality Management: The Cadillac Quality Story,**" presented by **Rosetta M. Riley,** Director of Customer Satisfaction, Cadillac Motor Car Division, General Motors, and 1990 winner of the Malcolm Baldrige National Quality Award – 3:45 pm - 5:15 pm

Tuesday

Featured Luncheon: "**Communications Industry Meets the Press**" – top reporters from *The New York Times, Business Week, USA Today* and *The Boston Globe* answer questions on the health of the business, political muscle, hot new companies and mergers to watch out for. Moderated by former FCC Chairman **Richard E. Wiley,** now a managing partner with Wiley, Rein & Fielding – 12:00 pm - 1:45 pm

Other featured speakers include **Larry DeBoever** of Tucker/DeBoever Technologies, Inc.; **L. David Passmore** of Ernst & Young; **Robert E. Lewin** of X/Open; **Joaquin Gonzalez** of the META Group; **Patrick E. Campbell** of the North Carolina National Bank, and **Cory Van Wolvelaere** of Andersen Consulting.

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Technical Workshops

Thursday, January 30 2:15 pm - 5:00 pm
Friday, January 31 8:30 am - 12:00 pm

W3.1
Designing & Building the Network Control Center
Instructor: **James Wetterau, P.E.,** Principal, Networking Solutions

W3.2
Getting Your Best Deal on Outsourcing and Bulk Agreements: For Users Only
Instructor: **Mary Johnston Turner,** Principal, Northeast Consulting Resources, Inc.

W3.3
Worldwide Product/Type Approval and Certification
Instructor: **Thomas Ramsey, Esq.,** Squire, Sanders & Dempsey

W3.4
Internetwork Troubleshooting
Instructor: **Priscilla Oppenheimer,** Sr. Technical Instructor and Course Developer, Network General Corp.

W3.5
Network Design/Analysis: Case Study
Instructor: **Gerald Latham,** Network Design, Customer Solutions and Services, IBM

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"Wide Area Networks: Voice or Data?"
Tuesday, January 28 1:00 pm - 3:30 pm

"LAN and Wireless"
Wednesday, January 29 1:00 pm - 3:30 pm

"Internetworking and Systems Integration"
Thursday, January 30 1:00 pm - 3:30 pm

The **Federal Communications Forum** sessions are FREE with your conference or exhibits-only registration.

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Monday, January 27 5:15 pm - 7:00 pm

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DEC broadens All-In-1 package

continued from page 15

time, create and edit up to 25 on-screen columns and define pitch, margins and fonts on networked printers. Users can also set or modify print styles, combine multiple print jobs and prevent Adobe Systems, Inc. PostScript files from being printed on non-PostScript printers. The new release also allows users to search for words or phrases while reading a document.

All-In-1 DESKtop for Macintosh resides on Macintosh clients in an All-In-1 network and offers E-mail, file and application integration between those clients and All-In-1 environments. Users can create, read and file messages, as well as exchange documents and data via gateways with other All-In-1 Integrated Office System users, All-In-1 DESKtop users and others.

All-In-1 DESKtop for Macintosh also allows users to access DEC VMS applications through VT terminal emulation. According to DEC, the software lets network support staff customize icons and helps ensure messages meet specific departmental and work group requirements.

Another client program for All-In-1 IOS Server is a new version of All-In-1 DESKtop for DOS.

Version 1.1 runs on workstations running MS-DOS Version 3.2. It integrates popular word processing packages with All-In-1 IOS Server services so users can read, create and edit E-mail within their desired word processing program.

Finally, DEC unwrapped All-In-1 Manager for LANs, which is software that integrates distributed PC LANs into an All-In-I IOS Server environment.

All-In-I Manager for LANs comprises LAN and wide-area network components. The LAN module resides on a dedicated MS-DOS server and provides All-In-1 IOS Server security, systems management and office services to distributed Pathworks, Novell, Inc. NetWare, 3Com Corp. 3+, and Banyan Systems, Inc. VINES LANs. Systems managers can control and manage the exchange of inbound and outbound E-mail between users within and across these LANs, DEC said.

The WAN component is a VMS software module that links the DOS server with All-In-1 IOS Server. All-In-1 Manager for WANs manages the delivery of E-mail over the WAN and provides directory synchronization between the PC LANs and DEC's E-mail backbone through DEC's Mailbus directory service.

All-In-1 IOS Server Version 3 carries a single-user license fee of $880. Pricing for VAXcluster licensing begins at $10,545. It will be available in February.

All-In-1 DESKtop for Macintosh and All-In-1 DESKtop for DOS Version 1.1 are both priced at $230 per workstation and will also be available in February.

All-In-1 Manager for LANs is priced at $2,350 for VMS server software, $1,170 for MS-DOS server software and $210 for DOS and VT terminal client software. It is available now. ◻

Inverse muxes evolve to meet users' needs

continued from page 15

that time, the market for single-application units will explode from $12 million this year to $150 million in 1994, the company said. The multiapplication market, which is currently quite small, will grow from a $10 million business next year to a $100 million market by 1994.

According to Pigg, some inverse mux vendors have focused on the multiapplication market all along. Perhaps their time has come, she said. Promptus Communications, Inc., a Portsmouth, R.I., maker of inverse muxes, is a good example.

Promptus' existing CommServer products can be used to link multiple applications at a single site to the public network via a T-1 or Integrated Services Digital Network access pipe.

The company's CommServer+, for instance, can be used to link a private branch exchange to a virtual voice net, a router to a fractional T-1 network and a video codec to a switched digital network, said Al Lucci, president and chief executive officer of Promptus.

"It may be difficult for a customer to justify the cost of T-1 access to support one application," Lucci said. "Our objective is to spread the cost of the access pipe across multiple applications."

New inverse mux market entrants, such as Newbridge Networks, Inc., are also gunning at the multiapplication market, Pigg said. Newbridge earlier this year unveiled its line of Transmission Access Processor (TAP) products, including the TAP 5000 Virtual Channel Unit, an inverse multiplexer with four ports on the user side to support multiple applications, she said. ◻

Data Packets

continued from page 15

nal emulation to take control of a Clearlink Network Control System console.

The Clearlink management system, which runs on a Stratus Computer, Inc. minicomputer, uses the Stratus Communications and Systems Management product to send alerts to NetView. The link does not support control over the VSAT management system from NetView.

Dataproducts New England, Inc. recently announced the AXXESS/1, a multiplexer that can be used with either fractional or full T-1 circuits. The company said the AXXESS/1 uses highly efficient

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The RISC System/6000 also serves up remarkable performance, capacity and value. The POWERserver 550 runs at speeds you'd expect from a supercomputer, but runs up a tab starting at only $58,000. And

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multiplexing techniques that enable it to provide nine 56K bit/sec data channels on a 512K bit/sec fractional T-1 link, whereas most multiplexers support eight channels.

The product supports either a single channelized, D4- and Extended Superframe Format-compatible T-1 interface or a clear channel RS-442/V.35 aggregate.

When configured for T-1, the AXXESS/1 supports synchronous, asynchronous, isochronous and statistically multiplexed data channels at rates up to 512K bit/sec. It also supports pulse code-modulated voice at 64K bit/sec and compressed voice at as low as 4.8K and 7.2K bit/sec.

Using the RS-422/V.35 aggregate configuration, the AXXESS/1 supports any aggregate rate between 1,200 and 2.048M bit/sec. It is also asymmetric, meaning the transmit and receive transmission rates can be set independently of each other.

The AXXESS/1 supports 16 time-division multiplexed data channels, 32 statistically multiplexed channels, 32 voice channels or some combination of the three.

The product is available now. Pricing starts at $4,100.

Dataproducts New England can be reached at 50 Barnes Park N., Wallingford, Conn. 06492; (800) 243-4485.

The **General Accounting Office** recently issued a report stating that a group of Dutch computer hackers penetrated the Department of Defense computer systems in April and May during the Desert Storm operations in the Persian Gulf.

The report said that the hackers exploited the security weaknesses in the Internet, Defense Department and commercial networks in order to break into computer systems at 34 Defense Department sites.

The hackers, who are not identified in the report due to a Department of Justice investigation, obtained information on military personnel, logistics and weapons systems development. Easily guessed passwords or accounts with no passwords were the hackers' primary means of entry. They sometimes used the Trivial File Transfer Protocol, a file-transfer program that permits the copying of files without logging on, as a means of accessing files containing an encrypted password.

"While there is little evidence that the hackers destroyed information, in several instances, the hackers modified and copied military information," the report said.

Telebit Corp. recently upgraded its T3000 V.32bis modem to support its Packetized Ensemble Protocol (PEP).

PEP divides the voice bandwidth of a telephone line into 511 channels, analyzes their data carrying capabilities and selects the quantity of data to be sent on each channel. As line noise increases, PEP modems can reduce the transmission speed in 100 bit/sec increments to maximize error-free transmissions, Telebit said.

V.32bis is a CCITT standard for 9.6K bit/sec full-duplex, dial-up modems. V.32bis defines an echo-cancelling technique that enables the modem to establish two high-speed channels in opposite directions.

T3000 users can upgrade to PEP for $99 through March 31, 1992. After that, the upgrade will cost $199. ☐

EPRI to issue spec for interoperability

continued from page 15

Wade Malcolm, program manager at EPRI, the utility industry's research and development arm, said the final draft of DAIS Version 1.0 will soon be available for comment and approval.

DAIS will advocate a client/server-based distributed database management setup. It will also consist of a Database Resource Directory, which will include X.500 as one means of accessing the server, Richards said.

The DAIS spec will draw on RDA and SQL2, which are expected to be finalized in late 1992 or early 1993.

SQL2 is a database language providing a data model for logical tables and a way to define and manipulate relational databases. RDA, an application-layer OSI protocol, provides a way to access data from another system, where the system is defined as an application, database or file.

Richards said DAIS extends the functionality offered by RDA and SQL2 in order to define procedures to handle certain tasks not covered by either standard.

For instance, DAIS would include a provision for so-called fixed procedures, such as completing a file transfer within a fixed amount of time, or restricting the number of file transfer methods users of disparate databases could employ.

"We want to allow a fixed number of options," Richards said. "We are applying the draft standards beyond their intended scope."

DBMSs conforming to DAIS specs will be able to provide logging and accounting information in a uniform manner.

Early next year, EPRI plans to demonstrate DAIS at Northern States Power.

The extent to which vendors will support DAIS remains to be seen. According to Anne Thomas, technology transfer program manager at DEC, most vendors are still struggling to catch up with the 1989 SQL standard.

"You've created a big challenge for us vendors because we'll have to support SQL2 plus extensions," Thomas told attendees at a recent EPRI meeting.

But she said DEC planned to have products available for most elements of DAIS, although there are no plans to support one DAIS demand for complex data types. ☐

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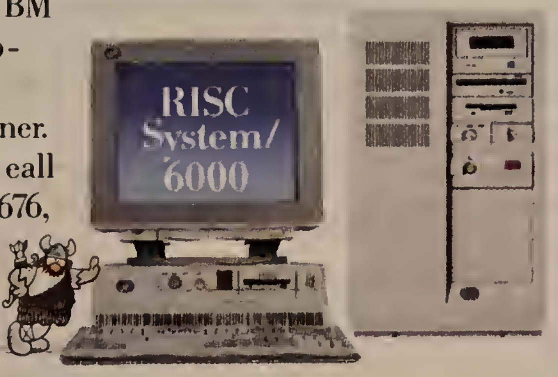

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Worth Noting

A rule of thumb in the requirements definition stage of network capacity planning: interactive applications require 1,000 to 10K bit/sec of bandwidth, while distributed applications need 10K to 100K bit/sec and file-transfer applications require 100K to 1M bit/sec.

Netnotes

Standard Microsystems Corp. has introduced a line of dual-channel Ethernet boards for Extended Industry Standard Architecture (EISA)-based servers. The 3032/EISA boards, one supporting two 10Base-T twisted-pair ports and the other having two coaxial cable ports, are both 32-bit bus-master boards and have on-board transceivers. Because both ports are on the same card, users can use one slot to support two nets.

The boards, which cost $945 each, come bundled with Novell, Inc. NetWare Version 3.X Open Driver Interface (ODI) drivers.

Farallon Computing, Inc. has added 12- and 24-port LocalTalk hubs to its PhoneNet StarController line that support Apple Computer, Inc. Macintosh computers using unshielded twisted-pair wire in star-configured nets.

Both the 12-port PhoneNet StarController PN357 and 24-port PhoneNet StarController PN377 will ship with a new version of Farallon's StarCommand management software Version 3.0, which has an enhanced graphical user interface and enables administrators to monitor traffic statistics and error reports for each StarController port and hub.

The StarController PN357 is available now at a price of $1,495, and the StarController PN377 is available now for $1,895.

Microdyne's net adapter supports FDDI over STP

Based on CDDI proposal being looked at by ANSI.

By Bob Brown
Senior Editor

ALEXANDRIA, Va. — Microdyne Corp. recently unveiled a network adapter designed to support 100M bit/sec FDDI transmissions over shielded twisted-pair wire.

The EXOS 505S adapters from Microdyne's EXOS Products Division are geared at token-ring network users looking to upgrade to Fiber Distributed Data Interface nets without scrapping existing wiring for fiber and installed media access units (MAU) for new wiring concentrators.

The products enable users to greatly increase the speed of their networks to the desktop and save money in the process, said Bruce MacAloney, director of OEM marketing and sales for Microdyne's EXOS Products Division.

Aiming at work groups

While FDDI is often used as a backbone technology, Microdyne is pitching its EXOS 505S adapters for work groups that need to support bandwidth-hungry applications, such as imaging, multimedia applications and video, MacAloney said.

"We're aiming this product squarely at the work group," he said. "We're targeting users that need to break the bandwidth bottleneck on their existing token-ring networks."

The adapter is based on the Copper Distributed Data Interface standard proposal currently under consideration by ANSI and complies with the Federal Communications Commission's Class B emissions operating requirements, MacAloney said.

Initially, Microdyne's EXOS 505S adapter will support only desktop computers based on the IBM Personal Computer AT bus. Within three months, the company plans to support the Extended Industry Standard Architecture and Micro Channel Architecture buses as well, he said.

Currently, the 505S adapter has software drivers for Novell, Inc.'s NetWare and Transmission Control Protocol/Internet Protocol networks. The company plans to support drivers for compatibility with Microsoft Corp.'s LAN Manager and other network operating systems.

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Backup system helps users restore failed LAN servers

By Caryn Gillooly
Senior Editor

NAPERVILLE, Ill. — Palindrome Corp. has brought out a new version of its Network Archivist LAN backup system that makes it easier for an administrator to reconstruct the server after a network crash.

According to Palindrome, based here, Network Archivist is software designed for backing up Novell, Inc. NetWare local-area networks. It runs on the network server or on a separate LAN workstation, which only needs to be dedicated to backup when archival is actually taking place.

The package backs up files from all servers and workstations on a network to a tape backup machine attached to the workstation or server on which the package resides.

The new features in Version 2.0d extend the system's intelligent storage management to include optimized tape lists, added export capabilities and unattended restores.

With the optimized tape list feature, the software automatically presents an administrator with a list of backup tapes needed to restore a server that has crashed. That obviates the need to search through tapes for needed data files.

Steve Bosak, communications manager at Palindrome, offered an example of how optimized tape lists operate. Say an administrator has created backup tapes from Monday through Friday and on Friday deletes some old files. If the server crashes after that, the system has the intelligence to restore the server exactly as it was when it crashed — it will not re-restore the files that were intentionally deleted.

"The new version tells the administrator which tapes will bring all the data back the quickest," Bosak said.

The enhanced version also includes new export capabilities. In addition to capturing to tape all the files on the server, the new

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Cisco President and CEO John Morgridge

Cisco exec discusses internet strategies

Says key challenges are service, support and overcoming the complexities of huge internets.

Q&A Internetworking is emerging as one of the key enabling technologies for building enterprisewide networks. But the vendors leading the router crusade are relative newcomers to the commercial marketplace, leaving corporate customers with a raft of questions about things like service and support, network management, and compatibility with existing net environments.

John Morgridge, president and chief executive officer of Cisco Systems, Inc., recently spoke with *Network World* Staff Writer Maureen Molloy about these and other issues. Based in Menlo Park, Calif., Cisco is the world's leading router vendor, commanding more than 35% of the global router market.

It's often said that internetworks are growing to the point of chaos. How does Cisco address, or plan to address, the issue of network management?

We have our own element managers, but our thrust is to provide application solutions that run on multiple platforms. Our strategy is to build a basic set of tools for the equipment we know and understand best and then work with other vendors in either standard or custom environments to provide the interfaces to their products.

While the LAN area has reached some level of stability, the management area is still in an experimental phase. And I don't see any quick or early breakthroughs because it requires a lot of software — and a fair amount of hardware — to do it in a fashion that makes operational and economic sense. Certainly, this is a horizon we're further away from than we'd like to be. It's unclear how it will evolve.

The user in this case has to make use of a diverse set of tools that are provided by the vendors and force those vendors to comply with whatever standards exist — [the Simple Network Management Protocol] being one of them — and do his own kind of custom development.

> Our strategy is to build a basic set of tools for the equipment we understand best.
>
> ▲▲▲

Either that or use public networks to a greater degree than he has in the past.

It's not so much a case that [the internetwork] is chaotic on a day-to-day basis. As a matter of fact, on a day-to-day basis it runs very well. But it's that uneasy feeling users get from having limited control of their network. And as networks grow larger and support more critical data, this lack of control will bring on greater feelings of discomfort.

The industry today doesn't have adequate management tools that can give the user comfort in terms of being in control and hav-

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Cisco exec discusses internet strategies

continued from page 21

ing a good strategic plan in place should something go amiss.

Another key challenge for router vendors today is the Systems Network Architecture issue. Who ultimately is going to gain control of the single internetwork backbone?

Certainly, this is a challenge at the industry level. Our strategy is to supply users with a series of products that will provide the capability to collapse their SNA net into a more common backbone.

At one time, there was the view that a vendor would come up with a single magic solution. It won't work that way and this certainly isn't Cisco's intent. Instead we have a five-phase approach to respond to our customer's SNA requirements. It'll consist of a series of products — both hardware and software — that will address the SNA environment. The environment is dynamic so the product set will probably change and evolve over time.

It's a particular challenge to a company such as Cisco because [SNA] is a new environment and not as pervasively understood in Silicon Valley [Calif.] as it is in Raleigh, N.C.

When will those products reach the market?

There's about six to eight new products that we'll be releasing over the next 12 months that will address SNA.

Most Cisco networks use the proprietary Interior Gateway Routing Protocol (IGRP), and analysts claim that industry migration to the standard Open Shortest Path First (OSPF) protocol will hurt you, even though you intend to support OSPF by early next spring. Where do you see OSPF and the Open Systems Interconnection's emerging Integrated Intermediate System to Intermediate System (IS-IS) fitting into Cisco networks?

I won't try to predict what will ultimately be the preferred routing solution, but I don't think OSPF and [Integrated] IS-IS will put us at a competitive disadvantage.

The choice of a routing protocol is not like a commitment to a network operating system in the sense that [routing protocols] are relatively easy to transition. In other words, it's not that difficult to get on or off IGRP. And in many cases, multiple protocols can operate simultaneously in the same network. We currently have some customers who run IGRP on the main backbone and the Routing Information Protocol in some of the outlying subnets.

The only place I can see where OSPF could prove to have an advantage over IGRP is if the user has a multivendor router environment. This typically isn't the case today. You won't find many users that have routers from more than one vendor.

Analysts claim service and support is a key challenge for router vendors such as Cisco that grew up serving academic and technology customers and that commercial users will be tempted by products from companies such as IBM or Digital Equipment Corp., which have greater resources.

I certainly agree that this area is our greatest challenge. It's an enormous undertaking and has become a major area of investment for the company. It's a challenge because internetworks are multidimensional and there's a richness of products contained within them. Now instead of just living in a Unix environment with TCP/IP, we're in a dozen different environments, all of which are dynamic.

The user is asking for AppleTalk 1 and 2, DECnet Phase 4 and 5, Novell's [Internetwork Packet Exchange], etcetera.

In addition, corporate networks are increasingly becoming geographically dispersed. It's one thing to have a 10-router network. It's quite another to have 450 routers in a network that spans the globe.

One of the barriers to growth in our industry is the lack of trained people who understand all of those environments.

We're investing heavily to provide that kind of service to our customers. We're spending a lot of money on education — we typically run two to three classes a week — and on hiring staff capable of providing that kind of service.

Having said that, I wouldn't agree that we're at a disadvantage in this area in relation to an IBM or DEC. The climate requires excellent technicians. It doesn't mean much to have a lot of people in a lot of places. What you need are people who know things and know it in-depth.

Knowing SNA isn't enough. Support staff need to know Unix, Apple, Novell, [Apollo Division of Hewlett-Packard Co.] Domain, Banyan Systems, Inc. and the list goes on. Is this the world of IBM?

IBM would prefer the world to stay with SNA and perhaps move to Advanced Peer-to-Peer Networking. It's their customers that are forcing them to open up their world. So I question whether [IBM] can be a good service arm in a world they didn't grow up in and never believed in.

Of course they have greater resources in terms of sheer numbers, but the question is whether those resources are applicable to the problems that the users are facing.

I don't believe they are. If the user's problem is one of swapping boards or replacing boxes, then I'd agree that the IBMs and DECs of the world would have an edge. But those aren't the users' problems. The

1975 *Launched the first U.S. public data network.* 1979 *Built the first commercial private packet network.* 1980 *Introduced the first major public e-mail service.*

1988 *Sprint completes the only nationwide 100% digital fiber optic network. Sprint awarded 40% of FTS 2000 contract.* 1989 *World's first and largest privately-owned*

hardware side of this issue is very small. It's the software and interoperability that are the key issues.

Issues of planning a network, introducing new equipment into the net or a challenging problem in the operation of the network, such as flooding or incompatibility, requires in-depth knowledge.

Do you intend to beef up the routing capabilities of the components you provide to LAN hub vendors?

That's certainly our commitment — to develop a more robust integration of the two products. The RubSystem [which Cisco will develop with SynOptics Communications, Inc. under a recently announced alliance] is a closer integration of the router and the hub both from a physical standpoint and, more importantly, from a software standpoint.

I can see that working with other vendors, too. We shipped [router modules] to Cabletron [Systems, Inc.] and Chipcom [Corp.] this past summer. We've had a strategy for the last 18 months of delivering routing technology through the channel that the customer wants. Our major customers have responded positively to it and think it's a good idea, so that's why we'll continue doing it.

There *will* be a merging of hub and router technology. There's already a merging at the entry level, and I think there will be a natural evolution over time of the technologies becoming more tightly coupled. It makes sense because we're a software company and the hub vendors tend to be hardware companies.

Do you plan on moving your routers into other devices besides the smart hub?

We [made] an arrangement early on with Network Equipment Technologies [Inc.] They built, based on our technology, a LAN/WAN Exchange router board that's housed in [NET's T-1 multiplexer] IDNX. I can also foresee other types of integration, such as placing them into servers. I encourage it, and I take all the phone calls when those [vendors] call. Many times I say 'not now,' but I certainly look carefully at all of them.

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transatlantic fiber optic cable completed. 1990 *Sprint announces the first commercial video services to the Soviet Union. Sprint introduces first nationwide ISDN capabilities.*

Net adapter supports FDDI over STP

continued from page 21

One of the major differences between the EXOS 505S and other FDDI-over-shielded twisted-pair adapters on the market is that the EXOS 505S adapters work in conjunction with a user's existing MAU, according to MacAloney.

Other products, such as cards from Network Peripherals, Inc., must be used in conjunction with a wiring concentrator.

Not having to employ new concentrators can save users thousands of dollars, he added.

Gordon Stitt, vice-president of marketing at Network Peripherals, a San Jose, Calif., start-up that unveiled its FDDI adapters in June, confirmed that the company's FDDI adapters work with concentrators. But he added that the FDDI standard requires a concentrator.

MacAloney, who declined to provide details on exactly how Microdyne's adapters are able to work with existing MAUs, disagreed with Stitt's contention that the FDDI standards require the use of a concentrator.

He acknowledged, however, that some users will want to employ concentrators for increased management functionality, among other reasons. In order to accommodate that, Microdyne plans to roll out FDDI concentrators within the next three months.

While MacAloney declined to provide details on the hubs, he did say they will feature "personality modules" that will enable users to support FDDI over multiple media types, including fiber and unshielded twisted pair.

Lee Doyle, director of LAN research at International Data Corp., a Framingham, Mass., market research firm, said Microdyne is addressing a niche market for users whose 4M and 16M bit/sec token-ring nets are being pushed to the limit.

"The question is, what percentage of token-ring users are looking to upgrade?" he said.

The EXOS 505S, which is based on an Advanced Micro Devices, Inc. FDDI chipset, is available immediately and is priced at $1,495.

The company has begun taking orders but declined to name any of its customers.

System helps users restore failed servers

continued from page 21

version will back up the file server's NetWare configuration information, including security rights and attribute information.

According to Bosak, this helps in restoring a server that has crashed or in setting up a new server with all needed information. This is helpful if an administrator had been upgrading the server or installing a new version of NetWare.

In addition, the new version includes an unattended restore capability through which the system can restore lost files without administrator intervention. The administrator need only be there to change tapes, if necessary.

Customers using Network Archivist Version 2.X will automatically receive the update free of charge. Customers using the 1.X version may upgrade to Version 2.0d for $395. The upgraded version is available now.

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Worth Noting

"We need to do a better job of bringing together those open systems people who are striving for software portability and those pushing for wider implementation of OSI."

Laurie Bride
Manager of communications technology
Boeing Computer Services Co.
Seattle

Association Watch

The U.S. Chapter of the **Digital Equipment Computer Users Society (DECUS)** will hold its Fall Seminar and Symposium programs Dec. 7-13 at the Anaheim Convention Center, Anaheim Hilton and Towers and Anaheim Marriott in Anaheim, Calif.

The events will begin with the DECUS Seminar, on Dec. 7-8, which will include more than 140 sessions in half-day, full-day and two-day formats.

Speakers will include volunteers from the chapter's various special interest groups, instructors from Digital Equipment Corp.'s Digital Educational Services unit and representatives from other professional training organizations.

The Symposium, which runs from Dec. 9-13, will feature more than 1,100 hours of tutorials, clinics and workshops. The sessions will address various aspects of computing with DEC products, including artificial intelligence, data management, graphic applications, languages, tools and network security.

For more information about the conference, call DECUS at (508) 841-3341.

The state of New York must lighten the tax load on telecommunications carriers or face an increased risk that

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The open systems logjam

What accounts for the slow growth of open systems?

Vendors

"Users aren't buying open systems products."

"Users are still buying proprietary and quasi-open systems such as TCP/IP."

"Users are confused about the variety of options within standards."

Users

"Vendors' open systems products are too expensive and lack the robust features specified by standards."

"Vendors don't offer the open systems products users need."

"Vendors' salespeople don't push their company's open systems products."

"Vendors' open systems products don't interoperate."

GRAPHIC BY SUSAN SLATER

GUIDELINES

BY ERIC SCHMALL

LAN deployment forces shift in net mgmt. strategy

Anyone who has to deal with LAN management can fully appreciate William Butler Yeats' apocalyptic lines, "Things fall apart; the center cannot hold / Mere anarchy is loosed upon the world," from his poem "The Second Coming."

Despite the training technicians have received and the tools users have acquired to measure the dynamics of traffic peculiar to local-area networks, there is a sense for many managers of a loss of control.

The root of the problem may lie in the mistaken assumption that LAN management is some subset of traditional network control. LANs do not fit neatly into the orderly and traditional notion of mainframe-centric computing and network management.

Having LANs means having dozens, even hundreds, of potential hosts, which is a profound change from a network manager's standpoint. Everything a manager has learned and assumed about managing data transport becomes upended.

For instance, with host-centric models, net managers focused concern on maintaining the availability of the bottleneck points, through which all lines led to the center of the network web. Thus, the front-end processor, the multiplexers, the local access lines and the master modem banks were carefully monitored. Often, they had hot spares standing by. Disaster recovery plans emphasized replicating all these systems responsible for the data delivery to and from the host.

Instead of a single host, LANs spawn an increasing assemblage of coequal processors, which are now called file servers. And bottleneck points have proliferated as well. Bridges, routers, bridge/routers and gateways all enable information exchange among these multiplying hosts.

Users may think of LANs as driving the democratization of networks. By contrast, net managers are likely to characterize the proliferation of LANs as the balkanization of an orderly, uniform system — something once in their influence.

The idea that every user represents a potential host in a mesh of intelligent nodes is a staggering thought for anyone responsible for managing information transport. Yet that is the very essence of the LAN revolution.

Network managers have to reorient their staffs toward this way of thinking. With LANs, there are no unimportant nodes; every interlinking point in the complex loom of modern networks is a potentially disastrous failure point.

The peer-to-peer revolution in the network has to be matched in the staff's working relationship with the LAN user community. The network group can no longer regard users as simply a collection of customers who must petition for terminals and data lines in order to access the host.

Network professionals must regard users as equals in planning and managing LANs. All the respect they had for designing and protecting access to the host must now be applied to each user in the LAN architecture. ◻

Schmall is a network systems manager for an insurance holding company.

Users questioning vendors' OSI motives

Conference-goers react to panelists' claims that users aren't showing interest in OSI products.

By Wayne Eckerson
Senior Editor

RESTON, Va. — Leading users lashed out at vendors at a recent conference for not developing open systems products that meet their needs and budgets and accused suppliers of impeding the growth of the technology.

Many users attending the User's Open Systems Conference here were galled by responses from high-ranking executives at top computer companies who told attendees that users were stifling the growth of open systems because they were not purchasing those products available on the market today.

During this Industry Power Panel discussion, executives from Allen-Bradley Co., Apple Computer, Inc., Digital Equipment Corp., Hewlett-Packard Co., IBM, NCR Corp. and The Santa Cruz Operation, Inc. said vendors will invest more heavily in developing open systems products when users begin buying such products in significant quantities.

While vendor statements drew few challenges during the panel session, users interviewed afterward said vendors need to start the ball rolling by reducing the price of existing products, increasing their functionality and ensuring they interoperate with comparable products from other vendors.

In addition, users said vendors must educate their sales staffs about open systems and train them in selling open systems products.

"Vendors don't give us the [open systems] products we need and want," said Mike Kaminski, manager of the advanced engineering staff at General Motors Corp. in Warren, Mich. "They only develop those products they want to give us, and they make the products four to six times more expensive than their proprietary systems."

Kaminski's remarks came a day after the Industry Power Panel session during a joint press conference held by the User Alliance for Open Systems and the North American MAP/TOP Users Group. Those two groups were among the sponsors of the Open Systems Conference along with the Electrical Power Research Institute and the North American ISDN Users' Forum. The conference was hosted by the Corporation for Open Systems International.

Other users at the press conference also expressed dissatisfaction with vendors' commitment to open systems, saying vendors are biased toward their proprietary systems and the Transmission Control Protocol/Internet Protocol.

"Vendors are not implementing all the features specified in the OSI standards," said Bruce Gengler, network consultant for Deere & Co. in Moline, Ill. "It's hard to justify spending money on products that don't offer more functionality than proprietary products or TCP/IP, which cost less and are more reliable."

For example, Gengler said most vendors have implemented only half of the file types specified in the ISO's File Transfer, Access and Management (FTAM) standard, making FTAM products roughly equivalent in functionality to TCP/IP. As a result, users are implementing TCP/IP-based products instead of FTAM or other OSI-based products because TCP/IP is more widely available and often comes bundled with vendor hardware and operating systems at no extra cost.

> "Vendors don't give us the [open systems] products we need and want."
>
> ▲▲▲

Jim White, chairman of the North American MAP/TOP Users Group, said most vendors' implementations of FTAM do not interoperate, giving users another reason not to purchase FTAM products.

In the absence of fully featured FTAM products, Gengler said some users are experimenting with incorporating all the functionality specified by FTAM into their TCP/IP networks, although he declined to say if they had been successful yet.

"There are a lot of frustrated users who would like vendors to beef up the functionality of their OSI products," Gengler said.

(continued on page 32)

SEVEN WAYS TO MAKE OR BREAK YOUR EUROPEAN HUB.

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Worth Noting

The average per-minute price for an international telephone call from the U.S. last year was $1.20, 4 cents higher than the figure for 1986. The average per-minute price has risen or remained constant every year since 1986, according to the Federal Communications Commission.

World News

Communications Satellite Corp. recently applied to the Federal Communications Commission for permission to reduce its international Digital Voice Service tariffs by as much as 58% on Jan. 1.

Digital Voice Service is used predominantly by carriers for international public switched network traffic. Currently, about 60% of all global switched traffic flows over satellite.

COMSAT said it hopes the reduction will encourage carriers to keep routing switched traffic over satellite.

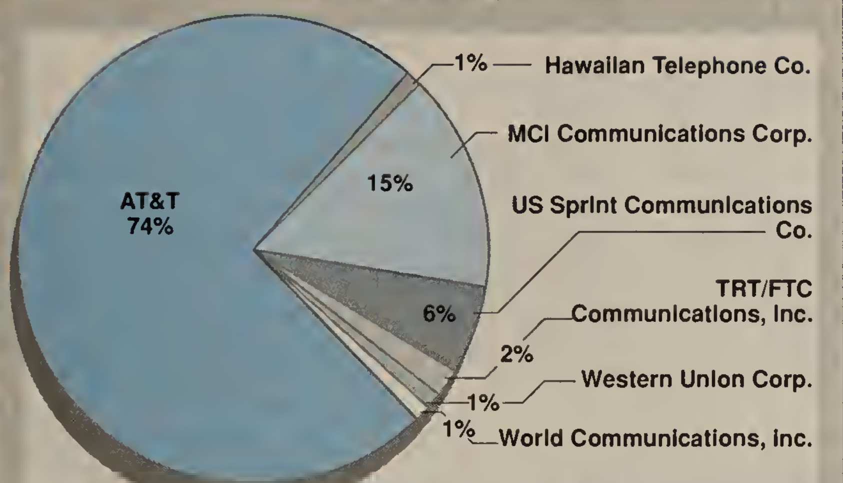
Subscribers now pay $24,640 per month for a 10-year lease on the U.S. half of a 2M bit/sec international, satellite-based circuit under the Digital Voice Service tariff, said Patricia Benton, vice-president of finance for COMSAT's World Systems division. This translates to $192 per month for a single voice-grade channel.

Under the new tariff, subscribers making a 10-year commitment will pay as little as $11,200 per month for the U.S. half of a 2M bit/sec circuit, or $88 per month per voice-grade channel.

By contrast, the cost of the U.S. half of a 2M bit/sec circuit on the Trans-Atlantic Telecommunications-9 fiber cable, slated to commence service in February, is about $9,600 per month, or $75 for a single voice-grade channel. ◘

U.S. carriers' international market share

Total 1990 revenues: $4.2 billion*



* For all international services

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D.C.

Aussie gov't gives Optus nod to set up new carriers

BellSouth, Cable & Wireless to head up effort.

By Barton Crockett
Senior Editor

MELBOURNE, Australia — The Australian government recently selected a consortium including BellSouth Corp. and Cable & Wireless PLC to establish the first full-service competitor to the country's monopoly domestic and international carriers.

By permitting network competition in Australia, the government is attempting to bring new service options and better pricing to a country that is a major international hub for U.S. multinational corporations.

Optus Communications, of which BellSouth and Cable & Wireless each own 24.5%, agreed to buy Aussat, Pty., the government-owned, debt-ridden satellite service provider, for $800 million.

Optus will use Aussat to anchor a new Australian carrier that is expected to begin providing domestic and international voice and data services next year.

In the second quarter of 1992, Optus plans to begin providing analog cellular telephone services. And in the fourth quarter of next year, the carrier plans to make domestic and international fixed network services — namely, public switched telephone and private-line services — available to 45% of Australia's population.

In early 1993, Optus plans to roll out a digital cellular telephone service. Later that year, the carrier plans to introduce value-added network services.

By 1997, Optus expects to make its fixed network services available to virtually all Australian users. At that time, the carrier's digital cellular telephone services should also be available to 80% of the Australian population.

Currently, the country's only carriers are domestic service provider Australian Telecommunications Corp. and international carrier OTC, Ltd. These carriers are being merged to create a duopoly competitor to the Optus consortium. In 1997, the Australian government plans to open the market to full competition.

The selection of a consortium lead by BellSouth and Cable & Wireless represents both a dilemma and an opportunity for U.S. users. Some observers question whether massive foreign investments by regional Bell holding companies are a flight of capital that could be better spent on the U.S. public net. BellSouth expects to invest $300 million in the Optus venture over four years. Optus expects to spend $3.1 billion over five years to build a new public net in Australia.

But users could benefit if Cable & Wireless includes Optus in plans to offer a consistent set of global business services. Cable & Wireless, based in London, currently owns major stakes in 36 public telephone companies, including Cable & Wireless Communications, Inc. in the U.S., Hong Kong Telecommunications, Ltd. and the U.K.'s Mercury Communications, Ltd.

Cable & Wireless executives want their carriers to offer a more consistent set of international business services to help users build global networks. The services being developed include international frame relay, router and virtual network services. Analysts predicted Cable & Wireless will include its Australian carrier in these plans. ◘

VW views nets as key to business mission

Top net managers say regulatory, cost factors limit effectiveness of enterprise nets in Europe.

Q&A Volkswagen AG is the fourth largest car manufacturer worldwide. Last year, it built more than three million vehicles under the brand names Volkswagen, Audi and SEAT, which are sold in virtually every country in the world.

Over the years, Volkswagen has been an innovative user of information technology. An example is the company's Rechner Verbund software, which consists of early electronic data interchange-like applications that have been marketed for years to car manufacturers and other large companies in Germany.

Computerworld Danmark Senior Editor Mads Christensen recently ventured to Volkswagen headquarters in Wolfsburg, Germany, where he spoke to Hagen Hultzsch, manager of Volkswagen's information systems (IS) division, and Klaus Schulz, manager of network communications, about a variety of factors affecting the multinational company's network plans.

How is networking viewed within Volkswagen?

Hultzsch: Building a global patchwork of individual plants and sales organizations and making these different bodies effective depends largely on management of communications and information. In that sense, information technology is a key tool to competitive activity. That is why we focus so much on improving our information services and making them globally integrated.

To us, it is an important issue to integrate new companies and partners quickly into the [information technology] infrastructure. If we do not accomplish this, we will not be able to integrate the business processes and then we will not reach the economies of scale, which is the primary reason we bring companies together.

How imperative is it to revise your network plans?

Schulz: At the moment, we are in the process of restructuring our entire corporate backbone network. The main reason behind this is to establish better backup line availability.

We have also included an architectural shift in this net restructuring in order to dynamically use the available bandwidth for both voice and data. The backbone restructuring is not yet complete, and details of our future hubbing strategy have not been finalized. This depends largely on the developments of line tariffs on the European end. The direction in which we are heading, however, is 2M bit/sec links across the network and then backup on meshed networks.

Hultzsch: We are also looking at satellite connections. For example, since the first of May, some factories in Czechoslovakia were integrated into our network via 9.6K bit/sec links to Wolfsburg because nothing else was available to Czechoslovakia.

But we will soon have a satellite link with greater capacity to those sites from the roof of this very building, so we can communicate more effectively at a reasonable cost, which is, of course, a major issue.

> Regulatory and cost issues do not allow the use of VSAT in Europe as we do it in the U.S.

▲▲▲

In North America, we have been very successful with our VSAT project. Our dealer distribution system there has long distances to overcome, so the VSAT connections have proven a very cost-effective medium. We can communicate at high speed from our central site to all the dealers in the U.S., and in the other direction, we have a reasonable bandwidth at low cost so that the dealers can really be kept on-line.

Schulz: However, regulatory and cost issues do not allow the use of VSAT in Europe as we do it in the U.S.

A VSAT network in Europe similar to the one we have in the U.S. would not be cost-effective at all. That is why we are using satellite connections in a different sense on the European side. Here, we use point-to-point connections only, which have been installed mainly because of the lack of terrestrial links in the Eastern European areas.

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VW views nets as key to business mission

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You mentioned earlier an effort to meld voice and data onto your corporate network. What is your strategy for doing that?

Schulz: We see a tremendous need to integrate voice and data for cost reasons and for net and IS management reasons.

Regarding bandwidth, in order not to increase the line cost, we will reduce the bandwidth for voice.

Our 384K bit/sec line between Wolfsburg and the U.S., for example, is currently used about 70% for voice.

Today, we compress voice using [adaptive differential pulse code modulation] into 32K bit/sec only. But in our network reconfiguration project, we intend to compress voice traffic to 8K bit/sec. Thus, we intend to lower the bandwidth allocated to voice traffic on the U.S. link because we need more bandwidth for the data applications like CAD/CAM.

We have decided to base this compression on RNET RLX products from Republic Telcom [Systems Corp.]. We already use their equipment to compress voice to 8K bit/sec on some point-to-point links in Europe, for instance, between Wolfsburg and Brussels, Belgium, and to some of our locations in the new German states.

Outsourcing IS operations has caught on big in the U.S. Have you considered cooperating with external service providers here in Europe?

Hultzsch: We discussed the possibility several times — ranging from Hewlett-Packard [Co.] to [Electronic Data Systems Corp.] — and so far, we don't see the need. We would look at it from a corporate point of view. Our business is to develop, produce and distribute cars cost-competitively, so if we see a cost advantage with a service provider, we would probably do so.

Schulz: As a part of our network reconfiguration project, we are currently looking at different service providers in the WAN area where we definitely could imagine outsourcing WAN activities.

We cooperate, for instance, with MCI [Communications Corp.] on the U.S. end, which is a service provider for our satellite link between North America and Mexico, and also the transatlantic link. But it is easier to do this in the U.S. because most carriers there are more efficient when cooperating directly with customers than the European PTTs.

Another possible outsourcing venture would involve our Shanghai Volkswagen and Automotive Works in Chanchung, China. We intend to connect their computers with our network. But to do so, we would have to deal with the Chinese PTT and local authorities there. They probably only speak one Chinese dialect so this would make it very difficult to coordinate the business from here or even from our offices in Shanghai or Chanchung. Therefore, our China links will most certainly be established via a service provider.

Which factors limit your ability to build pan-European nets?

Hultzsch: In the European part of the world, it is still very much the PTTs that are setting the scene because of their traditional monopolies. This monopoly environment is a situation we definitely have to overcome.

In Germany, we are charged a factor of 20 times higher for high-speed lines — if they are available at all — than our partners in the U.S. or in Japan. This is a real disadvantage to the European high-tech industry.

Regarding costs, I would have to go significantly higher percentagewise than my colleagues on the other continents for the same amount of net capacity. But my management would not allow me to do that.

Another hurdle we face is sometimes we are forced to fight to get services across borders. For instance, we have 64K bit/sec lines to Spain that we had to use pressure and even political lobbyism to obtain because only 9.6K bit/sec was available. What we actually need is 2M bit/sec lines to link our different locations in Spain.

Furthermore, the tariffs for international telephone traffic in Europe are much higher than connections over similar distances in North America. Even though the distance from here to Paris is like from New York to Detroit, the charge is [comparable to that of] New York to Mexico.

What could remedy this situation?

Hultzsch: All this will have to change. The breaking up of the Bell System in the U.S. has proven to be very cost-effective for the nation and for the industry, and I think Europe should go in the same direction.

There is no way to guarantee real economy of services unless there is competition in the market among at least two providers. We cannot accept any longer that we do not get the services we need, such as our desire for pan-European 2M bit/sec links.

In Germany, I think that it would be best if Deutsche Bundespost [Telekom] develops into some sort of an FCC-like regulatory body. But first they would have to get rid of all the bureaucracy and rethink how they work.

Schulz: Our advice to foreign companies that need to establish connections into Germany is that they should at least compare Deutsche Bundespost Telekom's conditions with other service providers. Furthermore, it would be advisable to consider hubbing outside Germany because of regulatory issues. ◼

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

First Look

Future Domain unveils low-cost SCSI adapters

Future Domain Corp. recently unveiled a line of host adapters designed to interface Small Computer System Interface (SCSI) peripherals to personal computers.

The products include the **TMC-850M,** the **TMC-860M** and the **TMC-885M.** The products are adapter boards that enable PCs to link with a large variety of SCSI peripherals, including large-capacity fixed and removable disks, digital audio tape devices, CDROM drives and optical devices.

Each board utilizes an industry-standard 25-pin external connector.

The TMC-850M is designed to fit in IBM PC XTs or ATs, the TMC-860M is designed solely for IBM PC AT bus-based machines, while the TMC-885M comes with a floppy disk controller for the IBM PC AT bus.

Available now, the TMC-850M costs $70, the TMC-860M is priced at $110, and the TMC-885M costs $135.

Future Domain Corp., 2801 McGaw Ave., Irvine, Calif. 92714; (714) 253-0400.

Firm introduces Windows file-transfer utility

East Coast Software recently announced a Microsoft Corp. Windows-based file-transfer utility designed for laptop-to-desktop transfers.

WindowsLINK is a software utility that resides on an IBM Personal Computer XT or AT, or Personal System/2 microcomputer running Windows 3.0. It uses a dual-window graphical representation for file transfers that supports both the Windows graphical user interface and DOS character-based PC environments. This enables users to transfer and copy files in either DOS or Windows modes.

The utility also offers a feature that automatically transfers only new or modified files between a laptop and a desktop PC. This helps guarantee that the most up-to-date files are on both computers, the company said.

During file transfer, the user can choose from pop-up

(continued on page 33)

SunPics broadens computer support under NeWSprint

PCs, Macs and minis can now tap net printers.

By Joanne Cummings
Staff Writer

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc.'s SunPics business unit recently said it has enhanced its NeWSprint software to enable users on various computers to use any printer on an enterprisewide network.

NeWSprint 2.0 enables users of Apple Computer, Inc. Macintoshes, personal computers, Sun workstations and minicomputers to print files to any network-attached printer, including dot matrix, laser and color printers or plotters.

Until now, NeWSprint 1.0 only gave Sun workstations the ability to tap various printers across a corporate network.

"Macintosh, PC and other computer users can print to any printer they choose, not just the one tied to their desktop computer," said William Marr, vice-president and general manager of SunPics. They can share printers across the company rather than wait in a print queue for a departmental unit, he added.

NeWSprint 2.0, like the previous version, resides on a network-attached Sun workstation tied to a network printer. It enables users on the network to print PostScript and non-PostScript files using the Sun workstation's SPARC processor to enhance throughput. It speeds printer performance by allowing the SPARC to handle page image processing, rather than relying on the printers' slower on-board processors.

In the new software version, SunPics added support for PC and Macintosh applications, so users of those computers can direct files to any printer on the network attached to a NeWSprint-configured workstation without leaving their applications.

According to Kevin Ohlson, marketing manager for SunPics, the software can operate over a variety of local and corporate-wide nets, but requires optional software and network adapters to link the NeWSprint host workstation to the net.

(continued on page 33)

DSET offers ASN.C Tool Kit to build OSI applications

By Ellen Messmer
Washington Correspondent

MORRISTOWN, N.J. — Distributed Software Engineering Tools Corp. (DSET) recently unveiled Version 2.1 of its ASN.C Tool Kit for developers using the C language to write Open Systems Interconnection applications.

OSI applications are difficult for C language programmers to write because the programs require an ISO format called ASN.1 and C doesn't support some ASN.1 networking functions.

Consequently, programmers have to map some ASN.1 data types to C data structures — a complex and time-consuming procedure.

But DSET's new ASN.C Tool Kit, which combines three sets of data compilers, extends the C language to support all ASN.1 data types as if they were native data types.

"With ASN.C, they don't have to become experts in ASN.1," said Dan Shia, director of technology and founder of DSET.

"Directly supporting all ASN.1 types in an extended C language allows the user to reduce software bugs dramatically," Shia said. "It also means that a C programmer can learn to write programs handling ASN.1 data quickly."

The three compilers in ASN.C include:

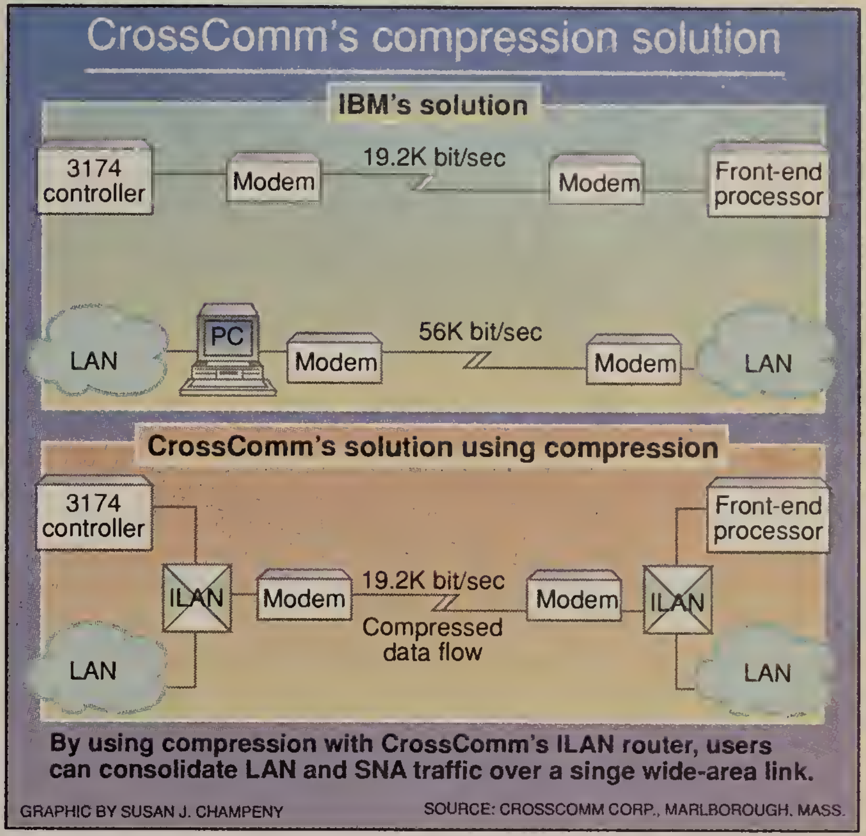
- The ASN.1 Compiler, which reads data type definitions in ASN.1 notation and generates internal tables to be used by generic coding and decoding routines provided in the ASN.C library.
- The Abstract Data Compiler, which is used to define new ASN.1 data types.
- The Abstract C Compiler, which reads applications written in extended C language and generates executable code.

ASN.C also comes with ASN.1 definitions for X.400, X.500 and the Common Management Information Protocol, as well as product documentation and 90 days of free technical support.

ASN.C Version 2.1 is offered in the binary version under a $9,990 perpetual licensing fee per user.

In the source-code edition, it carries a $55,000 licensing fee.

CrossComm's compression solution



By using compression with CrossComm's ILAN router, users can consolidate LAN and SNA traffic over a singe wide-area link.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: CROSSCOMM CORP., MARLBOROUGH, MASS.

CrossComm router melds LAN, SNA data

ILAN gets compression feature to transmit LAN, SNA traffic on common line; firm supports SNMP.

By Joanne Cummings
Staff Writer

MARLBOROUGH, Mass. — CrossComm Corp. recently unveiled enhancements to its ILAN router that enables users to combine local-area network and IBM Systems Network Architecture traffic over a common wide-area line.

The new router, ILAN Release 4.02, also offers support for the Simple Network Management Protocol (SNMP) for the first time.

CrossComm unveiled its W Module, a board for the ILAN that comes with integral software that compresses LAN and SNA traffic by as much as 4-to-1 and transmits it over a single wide-area port supporting speeds up to 64K bit/sec. IBM, by contrast, requires users to employ separate lines for LAN and terminal traffic (see graphic, this page).

"Nearly three-quarters of the Fortune 1,000 still use separate, side-by-side WAN links for LAN and SNA traffic, with SNA running over low-speed WAN links and LAN traffic running over 56K bit/sec WAN lines," said Gregory Koss, CrossComm's vice-president of marketing. "ILAN enables them to integrate LAN and WAN traffic over a common WAN link using the performance benefits of data compression."

The new router version is the first to combine data compression with SNA routing, Koss said. This is significant because by compressing the SNA data as it is routed over a WAN link, users can increase throughput and reduce the need for additional WAN lines between sites.

With the new W Module, ILAN Release 4.02 now has the ability to compress traffic by up to four times its original size. For example, using ILAN's compression on a 19.2K bit/sec line, users can receive throughput equal to that of a 56K bit/sec line, Koss said.

As before, the router enables users to support any combination of four LAN and WAN connections in a single unit. It can interface with Ethernet and token-ring connections on the LAN side; on the WAN side, it can interface with T-1, E-1, V.35, X.21, RS-422, RS-232, and 56K and 64K bit/sec links, among others.

Like the previous version, the router supports IBM's Source Routing and Source Routing Transparent protocols, as well as IEEE 802.3 Ethernet and 4M and 16M bit/sec IBM Token-Ring Network protocols.

The new router also features the ability to be managed by SMNP-based systems.

The new W Module comes standard with ILAN Release 4.02, as does the new SNMP management feature. Available now, ILAN Release 4.02 is priced beginning at $6,000, depending on configuration.

For more information, contact CrossComm at 140-C Locke Drive, Marlborough, Mass. 01752, or call (508) 481-4060.

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Allied Telesis unveils Ethernet cable converter

By Joanne Cummings
Staff Writer

MOUNTAIN VIEW, Calif. — Allied Telesis, Inc. recently unveiled an Ethernet media converter that enables users to join two types of cabling.

The AT-MR112T is a small wall-mountable, two-port unit that supports a thin coaxial 10Base2 connection on one port and an unshielded twisted-pair 10Base-T connection on the other. It converts signals between the two net types and is the first media converter to fully support the IEEE 802.3 specifications, the firm said.

"By allowing both segments of the network to meet full IEEE specs, network managers can now work in a simple plug-and-play environment without having to worry about conflicting specifications," said Anders Swahn, Allied Telesis product marketing director.

Other media converters can link dissimilar cabling but cannot meet the IEEE specifications for cabling length or number of nodes, he said.

The unit can link workstation adapters with RJ-45 jacks for unshielded twisted-pair wire to a 10Base2 net. Similarly, it can also be used to link workstations with BNC connectors for thin-wire Ethernet cabling to a 10Base-T concentrator. The AT-MR112T can be used to connect the different media and link workstations to the backbone from as far away as 100 meters.

The other application is for users that have thin-wire Ethernet interface cards and need to link to a 10Base-T network. In this case, an entire work group of as many as 30 workstations outfitted with the thin-wire Ethernet cards can be daisy-chained using coaxial cable connected to the 10Base-T net via an AT-MR112T, he said.

The product contains a new application-specific integrated circuit (ASIC) chip that enables the unit to repeat signals between the two media segments and ensure full IEEE 802.3 compatibility. The ASIC chip also allows the unit to offer network diagnostics, including 10 LED indicators displaying, for example, on-line, collision, receive and transmit status for each side of the LAN segment.

It also has the ability to turn off a network segment with excessive collisions.

The AT-MR112T, which is powered by an external universal input power supply, is expected to be available by the end of the month. It costs $375.

Allied Telesis can be reached at 575 E. Middlefield Road, Mountain View, Calif. 94043; (415) 964-2771.

Users questioning vendors' OSI motives

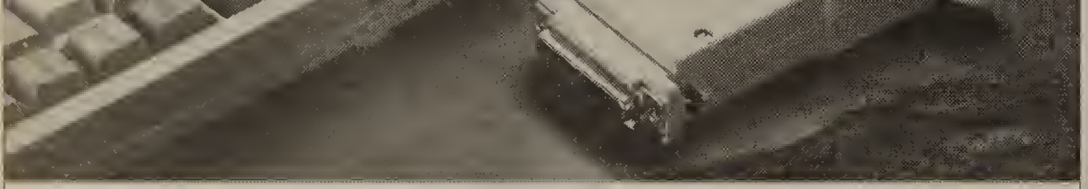
continued from page 25

But not all users are dissatisfied with vendors' open systems initiatives.

Don Simanton, assistant director of information resources management at the National Aeronautics and Space Administration in Houston, said vendors delivered the open systems products that the agency specified in a recent $100 million procurement. That procurement specified products based on the Government Open Systems Interconnection Protocol, Unix and the Portable Operating System Interface.

"We've had no problems getting vendors to deliver products that we want," said Simanton, a User Alliance board member. But other users have had less success in getting the open systems products they want. In fact, they said some vendors' sales representatives often do not realize their company makes open systems products.

"When we mention open systems, most vendor representatives look at us with blank stares," said one user at the press conference who requested anonymity.



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Remark! enables NetWave 3.0 for Windows users to manipulate voice

HP, Simpact device captures voice on any NETBIOS LAN in order to integrate it in documents, multimedia presentations.

By Joanne Cummings
Staff Writer

PALO ALTO, Calif. — Hewlett-Packard Co. and Simpact Associates, Inc. recently announced a voice integration product that lets users create, edit and play back voice messages within HP's NewWave desktop environment.

Remark! consists of hardware and software designed for HP's NewWave 3.0 for Windows that will enable NewWave users on any Network Basic I/O System local-area network to capture voice messages, such as a conversation with a customer, display them as desktop icons and share them with other network users.

"Remark! extends HP NewWave and allows users to capture a vital form of business communications — voice," said Harry McKinney, general manager of HP's Cooperative Object Computing Division.

The new product will also enable users to incorporate voice into compound documents and multimedia presentations, McKinney said.

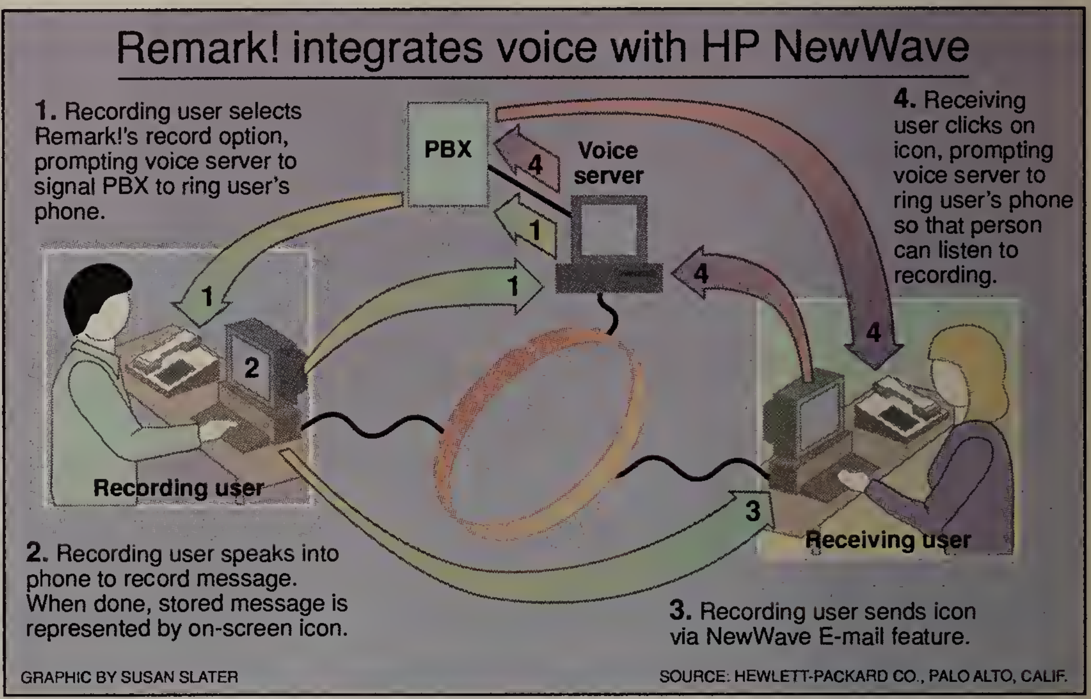
Remark! comprises client application software and Simpact's voice server, which is an Intel Corp. 80386-based personal computer running Simpact software that connects directly to the LAN and a company's private branch exchange.

The client software runs on LAN-attached IBM-compatible PCs running NewWave and converses with the Simpact voice server software, which controls the telephone operations.

To save a voice message, a user opens an icon within HP NewWave's Remark! application and selects a location, such as a file folder, on the desktop in which to store the message.

Remark! displays a window resembling a tape recorder with buttons that records, plays, pauses, restarts, fast forwards or rewinds messages.

When the record button is selected, the Simpact voice server rings the user's telephone (see graphic, this page). The user can then speak into the telephone receiver to record the message. When the message is completed, an icon is pasted into the previously selected location. The user can then send the icon to another user on the network via an electronic mail message.


Remark! integrates voice with HP NewWave
1. Recording user selects Remark!'s record option, prompting voice server to signal PBX to ring user's phone.
PBX
Voice server
4
1
1
1
4
4. Receiving user clicks on icon, prompting voice server to ring user's phone so that person can listen to recording.
4
2
Recording user
3
Receiving user
2. Recording user speaks into phone to record message. When done, stored message is represented by on-screen icon.
3. Recording user sends icon via NewWave E-mail feature.

GRAPHIC BY SUSAN SLATER

SOURCE: HEWLETT-PACKARD CO., PALO ALTO, CALIF.

When the receiving user opens the icon, the voice server prompts that person's phone to ring, and the user can listen to the message played back through the telephone receiver. Remark! also stores recordings from voice mail systems and conference calls.

Available in January, Remark! for HP NewWave 3.0 for Windows ranges from $5,500 for two concurrent users to $20,000 for eight concurrent users.

For more information, contact HP at 3000 Hanover St., Palo Alto, Calif. 94304, or call (408) 773-6459.

Association Watch

continued from page 25

the financial services industry — which bears a hefty portion of the taxes passed along by those carriers — will be lured to other regions of the country. That's according to John Compitello, chairman of the telecommunications and information management committee of the Securities Industry Association, at a recent joint New York State Senate-Assembly committee hearing.

Securities firms initially reacted to the higher costs in New York by relocating back office and data processing operations to sites outside Manhattan. As costs continue to escalate and telecommunications technology continues to improve, New York firms are finding it less essential to locate front-end operations in Manhattan as well.

"Because of the globalization of capital markets, it's no longer necessary for providers and users of capital to be located in the same place to complete a transaction," Compitello said.

Compitello outlined the "multitude of taxes" already imposed on telecommunications users in New York. Those taxes range from a franchise tax on capital stock and gross earnings to a gross receipts tax. Furthermore, these taxes are subject to a 17% Metropolitan Transit Authority surcharge and a 15% corporate income tax surcharge.

SunPics broadens computer support

continued from page 29

For instance, optional software from Information Presentation Technologies, Inc. (IPT) in San Luis Obispo, Calif., enables NeWSprint 2.0 to run in Apple's AppleTalk environments. Part of IPT's UShare software is a Bidirectional Print Spooler module that, together with a $595 SBus card, links a Sun workstation configured with NeWSprint 2.0 to an AppleTalk network.

The module, together with NeWSprint, enables Macintoshes to print files on a printer attached to the Sun workstation and allows Sun workstation users to print files to any AppleTalk printer. UShare costs $1,195 for unlimited Macintosh users, and the print spooler module is priced at $495.

Another network option permits a user to employ Sun's PC Network File System software on the Sun workstation, enabling NeWSprint 2.0 to operate over any Transmission Control Protocol/Internet Protocol network.

Other enhancements to NeWSprint 2.0 include improved color printing performance, faster monochrome raster printing and the ability to select print resolution.

The new version also enables other printer resources, such as the scalable fonts bundled with each copy of NeWSprint 2.0, to be stored just once on the network server, for example, and downloaded to any printer as needed.

NeWSprint 2.0 comes bundled with Printer's Palette, a compact disc containing more than 170 hardware and software products from third-party vendors that are designed for use in the NeWSprint network printing environment.

NeWSprint 2.0 is expected to be available in 90 days and is priced at $695, which includes one copy of the software, the CD and documentation. Users can also buy copies of just the software for $495, and users of NeWSprint 1.0 can purchase upgrades of the software for $149.

For more information, contact SunPics at 2550 Garcia Ave., Mountain View, Calif. 94043, or call (415) 336-3566.

First Looks

continued from page 29

menus a series of file, directory and disk functions, including file-transfer selection by name, date and time, as well as file and directory comparisons.

Other features include remote installation, pop-up transfer percentage gauge with estimated completion times, a file-viewing facility and a context-sensitive help system. It also enables file transfer and directory management tasks to be executed via single keystroke commands. Available by year end, it's priced at $149.

East Coast Software, 2300 Peachford Road, Suite 1150, Atlanta, Ga. 30338; (800) 829-8713.

Turbo redesigns fax server for multitasking

By Joanne Cummings
Staff Writer

GUTTENBERG, N.J. — The Turbo Group recently announced Revision 2 of its TurboFAX facsimile server software, providing concurrent support for as many as 12 fax lines, two printers and one communications line.

Revision 2 of the software, which runs on a TurboFAX server, has been completely rewritten to offer full multitasking features.

Previously, TurboFAX could handle faxing tasks on all lines, but a user had to shut down the unit in order to perform configuration tasks, such as changes in fax broadcast lists. Now configuration tasks can be performed on the fly, the company said.

Like the previous version, TurboFAX is available in four-, six- and 12-line models. It offers a serial port through which it can be connected to a network print server and receive downloaded text documents from any computer on a network.

With the new software, it supports simultaneous background receiving, broadcasting and optional dual laser printing of faxes without manual intervention.

Multiple features supported

At the same time, an operator can use TurboFAX's keyboard, communications line and display to support a variety of foreground functions, including on-screen viewing of fax documents; initiation, monitoring and control of background fax activity; fax document forwarding, composition, copying, deletion and renaming; adds, changes and deletion of fax addresses on broadcast lists; and initiation of fax status report printing.

In the background, TurboFAX can support concurrent operations, such as fax transmitting and receiving, on as many as 12 lines; printing of fax documents on as many as two printers; and utility functions such as ASCII-to-fax file conversion.

TurboFAX with Revision 2 software is available now; pricing remains unchanged from the previous version.

TurboFAX is priced at $20,000 for a four-line model, $25,000 for a six-line model and $40,000 for a 12-line model.

For more information, contact The Turbo Group at 7000 Boulevard East, Guttenberg, N.J. 07093; (201) 662-8827.

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OPINIONS

COMMUNICATION

BY DON DIETRICH

Using E-mail to encourage candor and spontaneity

A key but often overlooked benefit of electronic mail is its ability to break down the barriers to effective communications that many companies are actively trying to remove through such means as training and focus groups. Barriers exist, at least in part, because of a lack of three key qualities in business communications — safety, candor and spontaneity.

Suppose you want to know how one of your key projects is going. You can ask the project leader to present an overview at your next quarterly meeting, or you can send him a short E-mail note asking how he's doing and letting him know that you're available if he needs any help. Which is more intimidating? Which will get better results? If your goal is to make the project successful, E-mail works better.

> If your goal is to make the project successful, E-mail works better.
>
> ▲▲▲

In some cases, it even works better than a face-to-face conversation, especially if problems exist. You're much more likely to hear about project snags in an informal message than a formal presentation or a monthly report simply because it's a less intimidating medium; it's easier to reveal the good and the bad if you're not involved in a personal encounter.

As for candor, which of the following would be the best way to get employees' honest opinions about your new compensation/benefits package: by asking various people informally at the coffee pot, by asking every employee to submit a memo outlining their feelings, by having each employee fill out a multiple choice questionnaire or by offering to let any employee stand up at the next department meeting and present their views? E-mail doesn't guarantee candor but it does allow relationships to develop and conversations to take place that busy people might not have time for otherwise.

With E-mail messages, plain speaking is the norm; there aren't many forums today, especially in business, where that is true. The more people communicate, the more basis there is for trust and honesty. You want to tell your people when you think they're wrong and let them know when they're right. That doesn't take formalities. It takes an environment where busy people can communicate independently, quickly and informally. E-mail provides that atmosphere.

The final point: spontaneity. You can't schedule good ideas to coincide with the monthly report. Ideas do not thrive on formality, but rather on the ability to quickly move them around the organization.

Your company's annual report should look well prepared, but an idea for a new widget should start rattling around the best minds in your organization as soon as it can; you can dress it up later. Ideas that don't get passed around fade away and don't come back. There is no better medium than E-mail to communicate ideas quickly to lots of people and receive immediate feedback.

These qualities of safety, candor and spontaneity all contribute to the goal of getting people to talk to one another throughout the organization, and that's good. You don't need an expensive survey to find out how your people feel about business issues; just talk to them informally — via E-mail. ◪

Dietrich is a communications consultant based in St. Louis, who specializes in electronic mail and related applications. He is also a free-lance writer currently working on a new book outlining the business benefits of E-mail.

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EDITORIAL

User needs play key role in new NM Forum specification

Kudos are due to the Network Management (NM) Forum for working more closely with users in developing a specification for interoperability among different vendors' network management systems.

Previously known as the OSI/NM Forum, the group was once comprised of vendors only and was intent on using Open Systems Interconnection protocols for enabling net management systems to exchange data. It is now listening to users while developing a specification based on OSI but allowing the use of such protocols as the Transmission Control Protocol/Internet Protocol and IBM's Systems Network Architecture.

In abandoning its OSI purist views, the group is also willing to integrate the Simple Network Management Protocol (SNMP) into its existing OSI Common Management Information Services-based specification.

Fifteen large users, including the U.S. government, American Express Co. and E.I. du Pont de Nemours & Co., now sit on the NM Forum's user advisory council, which helps the NM Forum establish priorities and set timetables for achieving key goals.

The first of these dates is Aug. 31, 1992. By then, the NM Forum plans to add new functions such as trouble ticketing and security management to its existing specification.

While the NM Forum deserves praise for offering future associate memberships to users, what is perhaps more important is that the NM Forum's efforts have borne fruit. In October, two partnerships — IBM-British Telecommunications PLC (BT) and Digital Equipment Corp.-BT — used the NM Forum's specification to demonstrate links between their integrated net management systems. And IBM is reportedly close to announcing products based on the NM Forum specification.

Also, the NM Forum and four other organizations — the Object Management Group, the Open Software Foundation, Inc., Unix International, Inc. and X/Open Company, Ltd. — have been working closely to coordinate their efforts in object-oriented programming.

Some observers believed that the work of so many organizations would overlap and result in conflict. So last June, the organizations formed a committee to decide how to coordinate their efforts.

Just as development of SNMP went a long way toward enabling users to manage disparate devices from a single console, an NM Forum specification developed with user input can dramatically change the face of network management by enabling different vendors' systems to work together. ◪

OPINIONS

TELECOMMUNICATIONS ISSUES

BY MARY JOHNSTON-TURNER

Users benefit from strategic public telecom services

If you are a large user of telecommunications services, a multiyear bulk service agreement with a strategic telecommunications carrier is likely to be a competitive priority for your business — regardless of your industry. Three- to five-year contracts, such as Tariff 12 deals, are increasingly the norm among users.

In return for contract length and traffic volume commitments, strategic-user accounts receive preannouncement introductions to services and access to the carrier's best engineering talent when it comes to developing custom applications. In addition, they help the carrier define service attributes.

Users considering long-term agreements should spend the time evaluating more than just pricing, service levels, existing management tools and account team capabilities. They should also take a hard look at the underlying network infrastructure supplied by their carrier of choice. All networks may not be created equal, particularly for companies with a global perspective or specific application interests.

As the strategy of mixing private backbones with software-based virtual networks continues to dominate voice architectures, the strategic carrier's ability to rapidly introduce new services greatly affects the user's ability to compete. MCI Communications Corp.'s plan to introduce a network-based automatic call distribution service that marries 800-number services with routing control management tools and the automatic number identification elements of Integrated Services Digital Network illustrates how the right investments in network infrastructure can allow a carrier to roll out custom services rapidly and economically. Strategic-user accounts are likely to be the first to obtain access to such a new service, giving them a definite advantage over their competitors.

Some of the more obvious critical network infrastructure elements that users should evaluate include physical network diversity, disaster preparedness and backup, the ability to reconfigure and reroute dynamically, and fiber vs. satellite on overseas routes. However, there is a second, more critical level of infrastructure that many users may overlook — a carrier's software and network management architecture.

> The ability of users to manipulate the public network makes the net more cost-effective.
>
> ▲▲▲

As the success of the virtual network concept has shown, the ability of users to partition and manipulate the public network makes the net much more valuable and cost-effective than just private solutions or plain vanilla public switched services. All virtual networks offer some type of numbering plan control, user authorization procedures and forced on-net routing.

But what about the next step? If, for example, your business requires periodic transfers of large image files to multiple sites, you could lose a competitive advantage if your carrier can't support flexible image broadcast on demand. Global businesses need assurances of end-to-end service quality in order to mask the complexities of the underlying post, telegraph and telephone administration networks. How well does your carrier's global service management system make this a reality?

Users who have historically split network traffic across multiple carriers may find that for key business applications, they must shift to one carrier to take full advantage of proprietary software-based network services. Others may push carriers to provide open standard interfaces to value-added services while the user takes on the task of service integration. How multiple carriers must interwork, not only at the transmission and switching level, but also in terms of value-added management applications, must be clearly defined.

Software-based management capabilities will be a fundamental differentiator of public networks in the 1990s. Yet users attempting to get beyond the pricing and service descriptions to a clear identification of actual network software and hardware architectures may face a challenge. Carriers are often protective of such internal network information. Once users get beneath the surface, however, they may be staggered by the inability of the carrier to effectively piece together a custom solution.

The onerous legacy of older applications and computing platforms can be significant and will vary from carrier to carrier as well as from network service to network service.

Different carriers have different strengths and weaknesses in their underlying software and database infrastructures. Some of these differences can be overcome with integrated user management systems, while others are reflected in less than optimal service capabilities.

The user's challenge is to match key business requirements with a carrier that can best support that requirement, not only today, but also in the rapidly changing, software-defined, international voice/data and multimedia environments of the mid-1990s. ◘

Johnston-Turner is a principal with Northeast Consulting Resources, Inc., a Boston consulting firm that focuses on strategic management and information technologies.

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TELETOONS

BY FRANK AND TROISE

Let me put it this way.. if upper management decides to downsize networking operations, I'm sure we'll have proper warning.
Phil Frank

LETTERS

In defense of fax

I take issue with the opinions expressed in the Sept. 2 article by William Robinson ("Does facsimile technology have a future?" *NW*). This article fails to take into account the reality of why business decisions are made. It simply argues the wonders of computer technology.

Invented in the 1840s, fax technology continually evolved and its use exploded in the mid-1980s as prices for fully featured units fell to a cost that any business could afford. But the real reason fax was so universally adopted and is not likely to go away is that fax is easy to use, install and manage.

Any employee can dial a phone number and press a green button. The operator does not have to know how to log on and off.

I don't challenge the assertion made in the article that many things can be done better by computer than by fax. Fax functions will become the norm in computers in the future. What the article does seem to overlook, however, is that there are things that fax machines do much better than other technologies.

Today's Group III fax machines can send a page to anywhere in the world in as few as six seconds over an ordinary analog telephone line. Group IV fax, which uses digital lines, can transmit at 2 seconds per page with resolution that rivals the average personal computer laser printer. How long does it take to set up a PC for communications? How long does it take to send a page of text?

Today, computers do a poor job of receiving faxes. Hardware limitations make displaying a readable fax on the screen complicated and slow. In addition, there is no routing standard between

(continued on page 48)

Network World *welcomes letters from its readers.*

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Letters may be edited for space and clarity.

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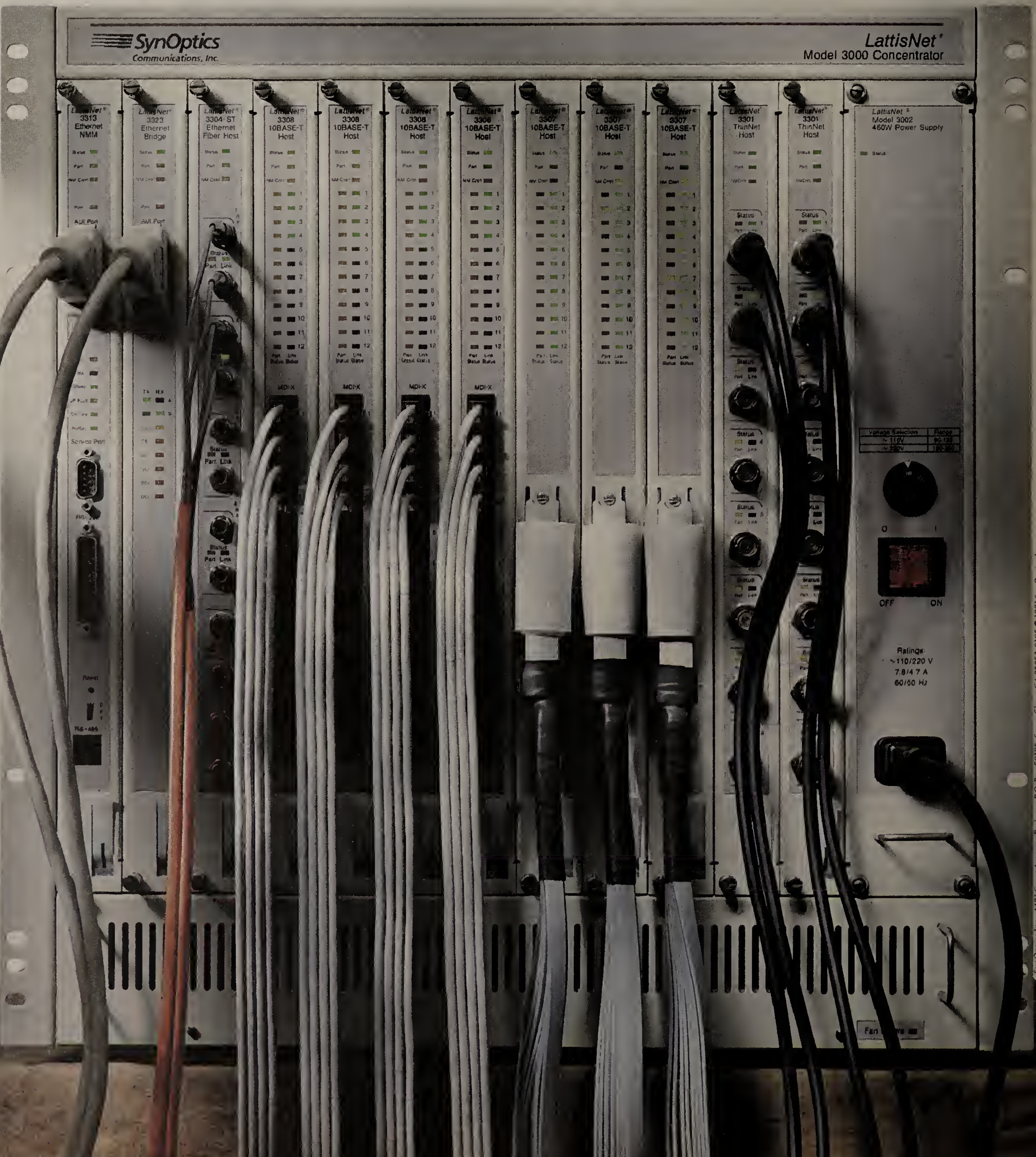
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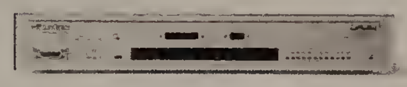
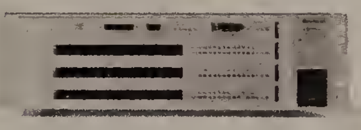


Model 2810 10BASE-T Managed Workgroup Hub.



Model 2310 10BASE-T Area Hub.

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For example, through strategic use of emerging technologies, South Central Bell's network design center is helping state and local governments across the South save tax dollars while improving public services. High-capacity ISDN digital data services, bandwidth on demand and protocol transparency are only a few of the ways we're enhancing point-to-point and multipoint connectivity. We're optimizing services for multiple applications, so each resource can do more. This allows economies of scale, easier sharing of information, and more effective interagency cooperation.

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DATACOM

BUYER'S GUIDE

INMSs

Exploring the many faces of INMSs

There are several integrated network management systems, but few look alike.

CONTINUED FROM PAGE 1

incorporate that information into a single database. These systems also provide some measure of control over network elements.

Such products include "super-integrators" such as AT&T's Accumaster Integrator, Digital Equipment Corp.'s DEC Management Control Center (DECmcc) Director and IBM's NetView.

Others include systems that manage a single vendor's equipment like Timeplex, Inc.'s Time/View and independent products such as Boole & Babbage, Inc.'s Net/Command and Systems Center, Inc.'s Net/Master.

LAN-oriented management products, such as Proteon, Inc.'s TokenView, and EMSs, such as Hewlett-Packard Co.'s OpenView Network Node Manager, are not covered. This product category will be the subject of a future Buyer's Guide.

HP's wide-area network-oriented OpenView Interconnect Manager is, however, included since it manages WAN devices.

In general, there are four types of network management systems.

The most basic is the network EMS — software that is generally built directly into a network device. It performs management functions relevant to that device and displays data on an attached ASCII terminal.

The management functionality does not extend beyond the device, other than enabling a higher level management system

(continued on page 44)

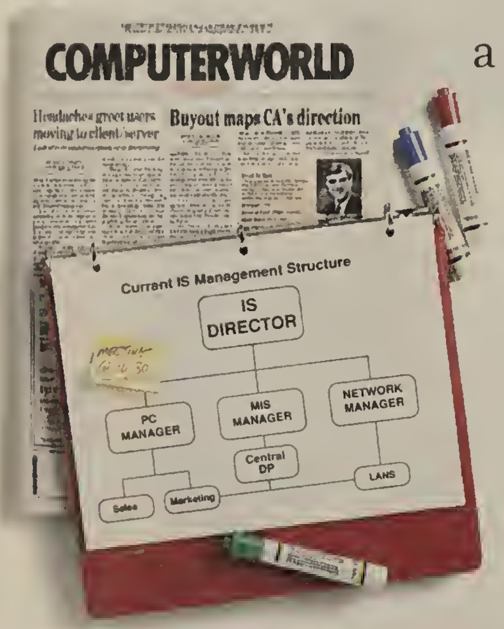
Guptill is an associate with TeleChoice, Inc., a Montclair, N.J.-based consultancy specializing in the competitive analysis and design of strategic, multinational intelligent network products and services. He can be reached at (201) 746-0200.

CHART • GUIDE

Buyer's Guide charts detailing INMSs and their network management functions begin on pages 42 and 43.

If there were only one kind of computer buyer, we'd only have one computer publication.

These days, technology has to serve everybody. The trouble is, everyone wants technology to do something different.

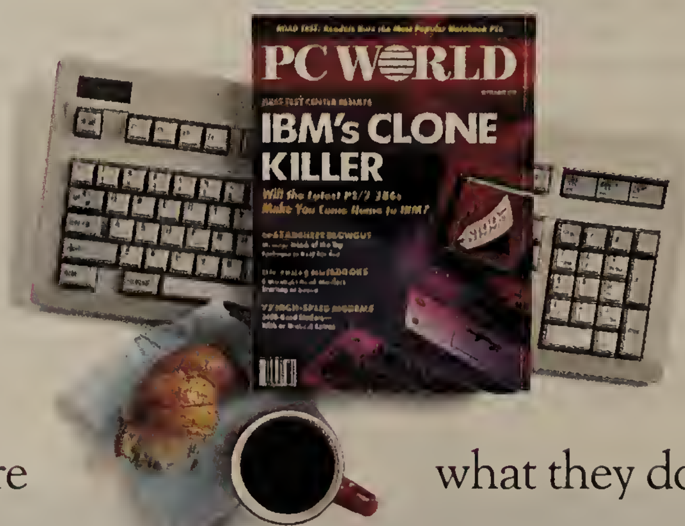

COMPUTERWORLD
Headaches greet users moving to client server
Buyout maps CA's direction
Current IS Management Structure
IS DIRECTOR
PC MANAGER
MIS MANAGER
NETWORK MANAGER
Central DP
LANS
Sales
Marketing

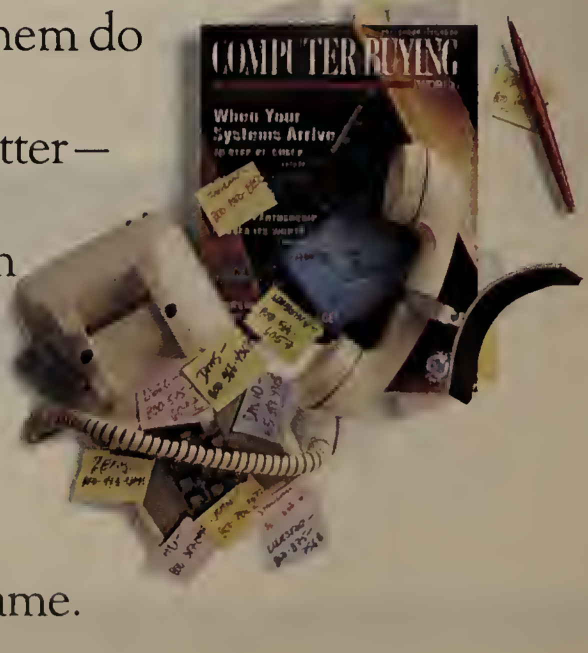
IS managers, for instance, are apt to put a very strategic spin on things. That's because they're charged with delivering information throughout the enterprise, integrating the company's computing and communications resources.

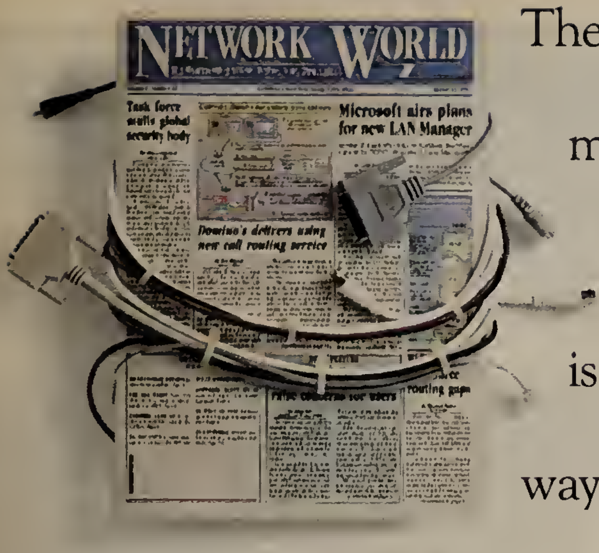
CIO's tend to look at the whole enterprise another way. After all, they're tackling some of the very trickiest issues in business. Like how to best use technology to produce the greatest business management gains.

Department managers, on the other hand, have to focus on doing just what their name implies. So they're more concerned with the productivity issues in their own backyard, their local area networks, and generally making sure their department is happy and humming along.

End users, however, have a different perspective entirely. They see the world from their desktop. They want whatever helps them do what they do better—while giving them access to the rest of the workgroup or a mainframe.





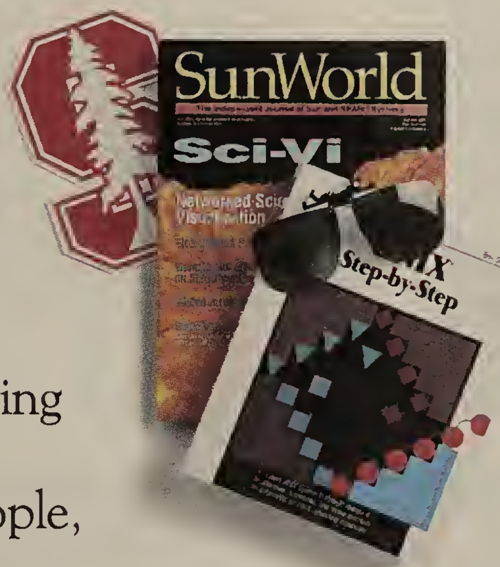

NETWORK WORLD
Task force crafts global security body
Microsoft airs plans for new LAN Manager

Then there's senior management. To them, technology is one of the best ways to gain a strategic, competitive advantage. Or, at least, it better be.

The point is, everybody's involved. All these groups influence each other. That's why, today, there's no one person who's responsible for buying technology for the many. Instead, in the networked corporation, there is a network of people who are responsible for buying and implementing technology, each responding to different needs and demands.

That's why they all need different kinds of information, presented in different ways, to help them do their jobs. And why we have more than one kind of computer publication.

In fact, IDG has more ways to reach more of your market than anyone. We also know more than anyone about how information technology is bought, having just completed the largest independent study of the buying process ever conducted.



It's called, "Buying IT in the 90s: The People, Patterns, and Process." And we'd like to share it with you. Just call Erica Baccus, our V.P. of Marketing, at 1-617-534-1210, for a free copy of the Executive Summary.

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Network management functions

Vendor	Product	Fault	Accounting	Performance	Configuration	Security
AT&T **Basking Ridge, N.J.** **(800) 638-6468**	Accumaster Integrator	Alarm display, alarm correlation, possible cause, recommended solution, terminal emulation to remote EMS; NMS gives control to remote EMS, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme
Boole & Babbage, Inc. **Sunnyvale, Calif.** **(408) 735-9550**	Net/Command	Alarm display, terminal emulation to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds	NA	NA	NA	NA
Cabletron Systems, Inc. **Rochester, N.H.** **(603) 332-9400**	Spectrum Advanced Management System	Alarm display, alarm correlation, possible cause, recommended solution; NMS gives control to remote EMS, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms, unauthorized user alarms
Digital Equipment Corp. **Maynard, Mass.** **(800) 343-4040**	DECmcc Enterprise Management Station	Alarm display, terminal emulation to remote EMS; NMS gives control to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, network schematics, audit trails, traffic history, activity summaries	Traffic loading, node utilization, error counts, user-definable thresholds for reports	Network inventory database, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords
General DataComm, Inc. **Middlebury, Conn.** **(203) 574-1118**	Megaview Version 2.0	Alarm display, possible cause, recommended solution; NMS gives control to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, network schematics, audit trails	Traffic loading, trunk utilization, node utilization, error counts, user-definable thresholds for reports	Network inventory database, network partitioning, real-time configuration changes, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme
Hewlett-Packard Co. **Networks Division** **Roseville, Calif.** **(800) 752-0900**	HP OpenView Interconnect Manager	Alarm display, alarm correlation, possible cause, recommended solution, terminal emulation to remote EMS; NMS gives control to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms
IBM **Research Triangle Park, N.C.** **(919) 543-5221**	NetView	Alarm display, possible cause, recommended solution, terminal emulation to remote EMS; NMS gives control to remote EMS, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords
MCI Communications Corp. **Washington, D.C.** **(800) 888-0800**	FocusNet	Alarm display, alarm correlation, possible cause, recommended solution, terminal emulation to remote EMS; NMS gives control to remote EMS, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms
Motorola Codex **Mansfield, Mass.** **(508) 261-4000**	9800 Integrated Network Management System	Alarm display, terminal emulation to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds	Number of network connections, network equipment type and location, automated database updates of network changes, audit trails, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords
NCR Corp. **Dayton, Ohio** **(800) 225-5627**	NCR StarSENTRY	Alarm display, event filtering, remote monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Network equipment type and location, traffic history	Traffic loading, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms, unauthorized user alarms
Newbridge Networks, Inc. **Herndon, Va.** **(703) 834-3600**	4602 MainStreet Network-Station	Alarm display, alarm correlation, possible cause, recommended solution, terminal emulation to remote EMS; NMS gives control to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms, unauthorized user alarms
Syncordia Corp. **Atlanta** **(408) 922-7918**	Concert Management Systems	Alarm display, terminal emulation to remote EMS; NMS gives control to remote EMS, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, authentication scheme, network breach alarms, unauthorized user alarms
Systems Center, Inc. **Reston, Va.** **(703) 264-8000**	Net/Master Version 2.2	Alarm display, alarm correlation, possible cause, recommended solution, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, audit trails, activity summaries	Trunk utilization, node utilization, error counts, system resource utilization, user-definable thresholds for reports	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	Multilevel passwords, unauthorized user alarms
Timeplex, Inc. **Woodcliff Lake, N.J.** **(800) 669-2298**	Time/View Network Management System	Alarm display, terminal emulation to remote EMS, event filtering, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Network equipment type and location, automated database updates of network changes, network schematics, audit trails, traffic history, activity summaries	Traffic loading, trunk utilization, error counts	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map icons	Multilevel passwords, unauthorized user alarms
Unisys Corp. **Blue Bell, Pa.** **Contact local office**	Common Network Management Systems	Alarm display, alarm correlation, terminal emulation to remote EMS, expert system programming hooks, event filtering, remote monitoring, real-time monitoring, user-definable thresholds, fully automated fault monitoring/reporting	Number of network connections, network equipment type and location, automated database updates of network changes, network schematics, audit trails	NA	Network inventory database, network partitioning, hierarchical groupings, real-time configuration changes, user-definable configuration parameters, network map display, network map display editing, network map icons	NA

EMS = Element management system
NA = Not applicable
NMS = Network management system

This chart lists the network management functions of a representative sampling of available integrated network management systems (INMS) products. Many vendors included in these charts offer other INMS products, and other vendors not included offer similar products.

SOURCE TELECHOICE, INC., MONTCLAIR, N.J

Integrated network management systems (continued on page 44)

Company	Product	Networks managed	Hardware and operating system requirements	Management console/operating system	User interface/context-sensitive help	Network management system protocols supported	Element management systems supported	INMS supported	List price
AT&T Basking Ridge, N.J. (800) 638-6468	Accumaster Integrator	Computer system- and carrier service-oriented	Sun Microsystems, Inc. 4/470; SunOS (Unix)	Sun SPARCstation 2; SunOS (Unix)	GUI; yes	CMIP, CMIS, SNA, Commitment Concurrency and Recovery, Remote Operations Service Element, Association on Control Service Element, File Transfer, Access and Management	AT&T EMSs include Acculink Network Manager; Accunet T1.5 Information Manager Release 1.1; Analysis 6510 Release 6.1.0; Compulert Generic 2CMC Issue 1; Computer Manager Release 3.4; Comsphere Series 6820 NMS Release 1.1 and 1.2; Comsphere Series 6838 NMS Release 1.1 and 1.2; Dataphone II Level IV System Controller Version 5.1; Integrated Access and Cross-Connect System; StarGroup Network Manager; StarKeeper NMS Release 3.0 Generic 4.3; Systems Manager; Tridom Clearlink Network Control System, Version 5.0; also supports EMSs from over 60 other vendors (call AT&T for details)	Net/Command Release 2.1, Version 4.0; Cabletron Systems, Inc. Spectrum Release 1 Version 0; Motorola Codex 9800 Integrated Network Management System; Data Switch, Inc. TotalNet; IBM NetView; Objective Systems Integrators, Inc. NetExpert; Systems Center, Inc. Net/Master Version 2.1	$120,000 (core software list price)
Boole & Babbage, Inc. Sunnyvale, Calif. (408) 735-9550	Net/Command	Computer system-oriented	Sun SPARCstation; SunOS	Sun IPC; SunOS	GUI, menu; yes	Any ASCII-based platform	Any ASCII-based platform	IBM NetView, any NMS with ASCII message stream output	Starts at $60,000 (software only)
Cabletron Systems, Inc. Rochester, N.H. (603) 332-9400	Spectrum Advanced Management System	Computer system-oriented	Sun, Digital Equipment Corp. DEC 2100, DEC 3100, DEC 5000; Unix, OSF/Motif, X Window System	Sun, DEC 2100, DEC 3100, DEC 5000; Unix, OSF/Motif, X Window System	GUI; yes	CMIP, SNMP	NetView	NetView	$50,000 to $150,000, depending on configuration
Digital Equipment Corp. Maynard, Mass. (800) 343-4040	DECmcc- Enterprise Management Station	Computer system- and carrier service-oriented	DEC VAX (most models); VMS Version 5.3 and 5.4	VAXstation 3100 or VT-1300 for GUI, any VT terminal for command-line interface; VMS, or none if using terminal	GUI, menu, text (command line); yes	DEC CMIP, SNMP	Motorola Codex 9800 Integrated Network Management System (prototype)	Syncordia Corp. Concert (prototype), NetView, Systems Center Net/Master (under development with Systems Center)	$44,200 (software only); DECmcc Basic Management System, $11,800; DECmcc Site Management Station, $26,500
General DataComm, Inc. Middlebury, Conn. (203) 574-1118	Megaview Version 2.0	Computer system- and carrier service-oriented	Sun SPARCstation; SunOS (Unix)	Sun SPARCstation, X Terminal, VT-100; SunOS, or none if using terminal	GUI, menu, text; yes	CMIP, CMIS, SNA, ANSI, Accumaster Integrator	GDC Netcon, GDC Megamux TMS, ANSI terminal-controlled EMS, GDC DEN*NET, GDC LAN TMS/S	NetView, Accumaster Integrator	Starts at $30,500
Hewlett-Packard Co. Networks Division Roseville, Calif. (800) 752-0900	HP OpenView Interconnect Manager	Computer system- and carrier service-oriented	HP 9000 Series 300 and 800, Apollo Division of HP 9000 Series 400 and 700, Sun SPARCstation (planned); Unix	Inbound management through Unix or OSF/Motif station, outbound management through terminal; Unix	GUI, menu; yes	SNMP/IP, TCP/IP, CMIS and CMIP (planned)	Any OpenView-based system	Any OpenView-based system	$17,000
IBM Research Triangle Park, N.C. (919) 543-5221	NetView	Computer system-oriented	IBM mainframe; MVS/ESA, MVS/XA, VM/ESA, VM/SP VSE/ESA	IBM PS/2; OS/2	GUI, menu, text; yes	CMIP and CMIS via IBM OSI/CS product, SNMP via IBM TCP/IP product, SNA	Include EMSs from ADC Kentrox Industries; AT&T Paradyne; Bytex Corp.; Cabletron Systems; Motorola Codex; Control Resources Corp.; Fibronics International, Inc.; Fujitsu America, Inc.; GDC; Hughes Network Systems, Inc.; Infotron Systems Corp.; NET; Newbridge Networks, Inc.; Racal-Milgo; StrataCom, Inc.; SynOptics Communications, Inc.; Telenex Corp.; Teleprocessing Products, Inc.; Timeplex, Inc.; TSB International, Inc.; Ungermann-Bass, Inc.; Univeral Data Systems, Inc.	Working on cooperative management with Accumaster Integrator	For central system, onetime charge ranges from $15,290 to $163,400, depending on host operating system, with monthly license charge ranging from $319 to $3,405; for distributed system, onetime charge ranges from $11,850 to $126,500, with monthly license charge ranging from $247 to $2,635
MCI Communications Corp. Washington, D.C. (800) 888-0800	FocusNet	Computer system- and carrier service-oriented	Unix-based systems; Unix	X Window System-supported terminals; Unix	GUI; yes	Any vendor-proprietary protocol, TCP/IP, SNMP and OSI-based architectures	All types of EMS	NA	Starts at $75,000
Motorola Codex Mansfield, Mass. (508) 261-4000	9800 Integrated Network Management System	Computer system- and carrier service-oriented	Apollo DN 3500 or DN 4500, HP 425; VTAM Version 3.1 or higher (for 9800VIEW NetView interface only), Network Control Program Version 5.0 or later, NetView Version 2.0 or 3.0	HP Series 400, ASCII-based terminal or PC using command-line interface; Apollo Domain, Unix	GUI, text, menu; yes	CMIP, SNMP, SNA, X.25, Link Access Procedure B, proprietary	Motorola Codex 9300, 9110 Dial Management System, Hughes 9000 Network Operations Console, Verilink Corp. VeriNET NMS	NetView, DEC Enterprise Management Architecture, Accumaster Integrator	Starts at $30,000
NCR Corp. Dayton, Ohio (800) 225-5627	NCR StarSENTRY	Computer system-oriented	NCR 3000 Series; Unix Version 4.0	Video graphics adapter monitor/terminal; NA	GUI, menu; yes	CMIS, SNMP	NA	Accumaster Integrator, NetView	Base price is $15,000, and agent software ranges from $50 to $1,000
Newbridge Networks, Inc. Herndon, Va. (703) 834-3600	4602 MainStreet NetworkStation	Computer system- and carrier service-oriented	Sun SPARCstation and compatibles; SunOS, SunView, Unix	Sun SPARCstation and compatibles; Sun OS, SunView, Unix	GUI (SunView); yes	CMIP, CMIS, SNMP, SNA (all concurrently)	MainStreet NetworkStation manages other vendor elements, not EMS	Accumaster Integrator, NetView, DECmcc (planned), Syncordia Concert (planned)	Starts at $10,000

CMIP = Common Management Information Protocol
CMIS = Common Management Information Services
CNMS = Common Network Management System
DECmcc = DEC Management Control Center
EMS = Element management system
GDC = General DataComm, Inc.
GUI = Graphical user interface

INMS = Integrated network management system
NA = Not applicable
NET = Network Equipment Technologies, Inc.
NMS = Network management system
OSF = Open Software Foundation, Inc.
SNMP = Simple Network Management Protocol

This chart includes a representative selection of INMS. These vendors may offer other systems, and other vendors not included may offer a full range of products.

SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

Integrated network management systems (continued from page 43)

Company	Product	Networks managed	Hardware and operating system requirements	Management console/operating system	User interface/context-sensitive help	Network management system protocols supported	Element management systems supported	INMS supported	List price
Syncordia Corp. **Atlanta** **(408) 922-7918**	Concert Management Systems	Computer system- and carrier service-oriented	Sun SPARCstation (others under consideration); Unix, preferably X/Open Portability Guide 3, Portable Operating System Interface 1003-compliant	Sun workstation, X Terminal; Unix	GUI; yes	CMIS, CMIP (OSI Network Management Forum-compliant), SNMP	ACC Co., Amdahl Corp., AT&T Paradyne Business Telecommunications Services, Case Communications, Inc., DEC, Ericsson Information Systems, Inc., Fujitsu Europe, GDC, GPT Switching Networks, HP, IBM, ICL Business Systems, Infotron, MCI, NET, Newbridge, Nokia Telecommunications, Inc., Northern Telecom, Inc., Prime Computer, Inc., Retix, Spider Systems, Inc., StrataCom, Systems Center, Systems Reliability, Ltd., Telecom Canada, Telematics International, Inc., 3Com Corp., Timeplex, Ungermann-Bass, Unisys Corp.	NetView (planned), DEC (planned)	Concert can be purchased only with an associated Syncordia network service
Systems Center, Inc. **Reston, Va.** **(703) 264-8000**	Net/Master Version 2.2	Computer system-oriented	IBM mainframe or compatible, Fujitsu America mainframes; DOS/VSE, MSP MVS, VM, MVS/XA, VM/XA, MVS/ESA, VM/ESA, FSP	SNA (IBM 3270) terminal/emulator; NA	GUI, menu; yes	SNA	All SNA Service Point applications, all SNA APPC applications	Accumaster Integrator	$6,000 to $66,500
Timeplex, Inc. **Woodcliff Lake, N.J.** **(800) 669-2298**	Time/View Network Management System	Computer system- and carrier service-oriented	Sun SPARCstation family; Unix Version 4.1.1	Sun SPARCstation family; Unix Version 4.1.1	GUI, menu; yes	SNMP	Time/View 2000, 2500, 3000; Time/LAN 100 EMS	Accumaster Integrator, NetView, Syncordia Concert (planned)	Starts at $4,500 (software only)
Unisys Corp. **Blue Bell, Pa.** **Contact local office**	CNMS	Computer system-oriented	Unisys U-6000/35, 65; Unix Version 4.0	X Terminal; Unix Version 4.0	GUI, menu, text; yes	CMIP, CMIS, SNMP (planned), Unisys Distributed Communications Architecture	Unisys Telcon CNMS Agent, CMS-1100 CNMS agent, any SNMP agent (planned)	Accumaster Integrator	$45,180 to $101,560

CMIP = Common Management Information Protocol
CMIS = Common Management Information Services
CNMS = Common Network Management System
DECmcc = DEC Management Control Center
EMS = Element management system
GDC = General DataComm, Inc.
GUI = Graphical user interface
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NMS = Network management system
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SNMP = Simple Network Management Protocol

This chart includes a representative selection of INMSs. These vendors may offer other systems, and other vendors not included may offer a full range of products.

SOURCE: TELECHOICE, INC., MONTCLAIR, N.J.

(continued from page 39)

to access the information it collects.

That higher level manager is often an NMS. The typical NMS manages the different offerings in a vendor's product family in a proprietary fashion.

Almost all current INMSs began as NMSs and grew as vendors developed links to other vendors' devices and management systems. NMS software usually runs on a Sun Microsystems, Inc. workstation or more powerful microcomputer. The Timeplex Time/View product can be considered an NMS, although its functionality extends somewhat beyond this level.

At the next level are INMSs, which are more powerful and functional than NMSs. Running on high-end workstations from Sun or the Apollo Division of HP, INMSs can incorporate information from multivendor devices and management systems.

At the top of the heap are the superintegrators. There are a select few of these systems that are capable of providing more extensive management functionality than any NMS. INMSs were designed from scratch to be "managers of managers."

These systems collect information from different vendors' network management systems or net devices and display it on an opertor console.

AT&T's Accumaster Integrator, DEC's DECmcc Director and IBM's NetView are among the most often cited examples of this type of manager. All require at least high-powered workstations or minicomputer-level hardware and associated operating systems. In IBM's case, NetView runs on mainframes under VM, MVS or VSE.

Some superintegrators, such as Accumaster Integrator and DECmcc Director running on its enterprise management station, are being developed directly to manage every element in a network, including data network devices, telephone equipment and carrier services.

NetView, on the other hand, was developed directly to manage IBM and non-IBM devices on a Systems Network Architecture net in addition to IBM's 9751 private branch exchange.

Some vendors are even building software interfaces that will enable their respective INMSs to exchange management data.

AT&T and IBM, for example, are working on an interface between Accumaster Integrator and NetView. This link will enable Accumaster Integrator to obtain SNA network management data and NetView to gain access to management information about carrier services.

In addition, DEC and Systems Center are working on a link that will enable DECmcc Director to gain SNA net management data from System Center's Net/Master while enabling Net/Master to access DECnet management data.

The INMS function

While there is some uncertainty about what an INMS really is, users and vendors agree it must perform one basic function: fault management, which includes reporting network faults and enabling nework operators to correct them.

To be useful, an INMS must be able to detect network problems and report these problems in a consistent manner to a central operator console. Such a system should be intelligent enough to filter through the multiple alarms that a typical problem, such as a failed circuit, generates.

When a circuit goes down, every device attached to it generates an alarm that is transmitted to the INMS. An alarm filter can correlate those alarms and display only the most likely cause of the problem to the user, rather than displaying each alarm.

"An integrated management system should be able to filter

A few words about the INMS charts

The chart comparing integrated network management systems (INMS), which begins on page 42, examines the basic technology of the listed products, including the required host computer system, software, management console and other similar information.

Remember that the list price given for each product is usually for the management software only, which is typically a set of core modules that enable the INMS to provide its basic functionality. Many INMSs require additional software modules, also called applications, to provide all of the functionality shown in the second chart on INMS offerings. These software modules cost extra, as does any hardware required to operate the INMS.

The INMS chart, which begins on page 43, lists the available network management functions of each product. These are grouped under five net management functional areas defined by the International Standards Organization: fault, accounting, performance, configuration and security management.

Some specific functions can be included under each functional area. For example, there can be user-definable thresholds for each of the functional areas. But the chart specifically lists user-definable thresholds under fault and performance management in the belief that this function is more important in these two areas.

Audit trails can be considered part of the accounting, security, fault or performance management functional area. But audit trails are listed under accounting management, where that function seems most important.

Two other functions, traffic history and activity summaries, are also often found in more than one functional area. For simplicity's sake, these functions have been grouped under accounting management. These functions are also applicable in the fault, performance and configuration areas but are most properly considered accounting functions.

This raises another important point. In a true INMS, the various management functions do not simply overlap; they work together. A network change made from an application supporting accounting functions should also be reflected in other functional areas, whether the INMS uses a single database or a database for each functional area.

Knowing what occurs in any part of the network is equally important to applications supporting all five functional areas.

— *Bruce Guptill*

alarms and pinpoint problem areas," says Christopher Durney, a communications consultant for Liberty Mutual Insurance Co. in Portsmouth, N.H. "I don't want to have to go to seven terminals to see seven alarms when there is one underlying cause. Show me which alarm is the most likely cause of the problem."

In addition to receiving and displaying alarms, fault management enables an INMS to locate, isolate and fix most anything that goes wrong with the network.

Advanced INMSs can display the possible causes of trouble and even recommend solutions. Truly integrated INMSs can repair some problems on their own or with minimal direction from the operator.

Eight of the INMSs listed in the charts can report the possible cause of a problem. Those systems are Accumaster Integrator, Cabletron Systems, Inc.'s Spectrum Advanced Management System, General DataComm, Inc.'s Megaview Version 2.0, OpenView Interconnect Manager, NetView, MCI Communications Corp.'s FocusNet, Newbridge Networks, Inc.'s 4602 MainStreet NetworkStation, and Net/Master.

All but two vendors — Boole & Babbage and IBM — enable the operator to make real-time network configuration changes.

Two important functions listed in the charts are the INMSs' ability to give some level of system control to a remote management system, usually a remote EMS. This would enable a remote NMS or EMS to govern its own realm or direct network configuration from a remote site.

That's not all

Fault management alone does not make an INMS. To be considered an INMS, the system should be able to run multiple management applications that process collected data. It must also include a single database that maintains and tracks all management data and can be shared by the various applications.

An INMS should also give users the option to spread management duties across multiple consoles, each of which presents information about different parts of the network to an operator.

In other words, the INMS needs to make as much information as possible about the overall network available to a central management console, but it should also make data about a specific geographic region or set of devices available to an operator responsible for managing that part of the network.

Lastly, an INMS should:

- Consolidate information from several EMSs or NMSs into one system.
- Reduce the number of stand-alone management systems and associated operator consoles a user needs to manage a network of disparate devices.
- Utilize a common user interface that displays information about various vendors' network devices in a consistent manner.
- Support more than one type of management function. For example, in addition to fault management, an INMS should support four other critical management functional areas defined by the International Standards Organization: accounting, performance, security and configuration management (see "A few words about the INMS charts," page 44).

Accounting management functions provide the means to measure the amount of traffic on the net and how it was generated. They also enable users to track the addition and subtraction of network devices, which nodes have been transmitting and when, as well as many other events.

Important functions that provide this information include a listing of network equipment type and location as well as an automated database update that reflects network changes.

Network equipment type and location listings are provided by all the listed vendors except Boole & Babbage. Automated database update of network changes is provided by all but five: Boole & Babbage, DEC, General DataComm, IBM and NCR Corp.

Performance management tells the network operator what is happening at any point in time, including how much traffic is on the net and how the links and resources are being utilized.

Since real-time performance management functions are not broken out in the charts, users must be sure to ask vendors for a listing of the functions their INMSs provide in this functional area.

Configuration management becomes increasingly important as networks grow and users require more flexibility to deal with changes and outages.

The network inventory database function, which keeps track of where network devices are located, works across the ISO's management functional areas. This database function enables an operator to handle almost every network configuration need, including moves, adds, changes and outages reported through the other INMS functions.

This database can be used in conjunction with features that support a network map display, preferably a map display that can be edited and gives users the flexibility to perform real-time network configuration changes.

With the exception of Boole & Babbage's fault management-oriented Net/Command product, all the INMSs listed provide a network inventory database. All the INMSs except Net/Command and Timeplex's Time/View offer a standard, editable network map display.

Security management is mostly a part of the other management functional areas. Every bit of information reported by other

(continued on page 48)

Some vendors think standards are all you need to build an open network.

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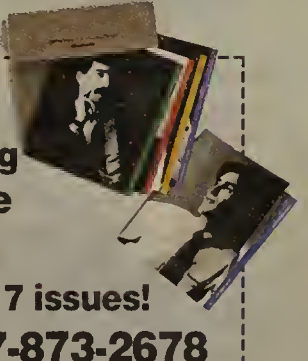

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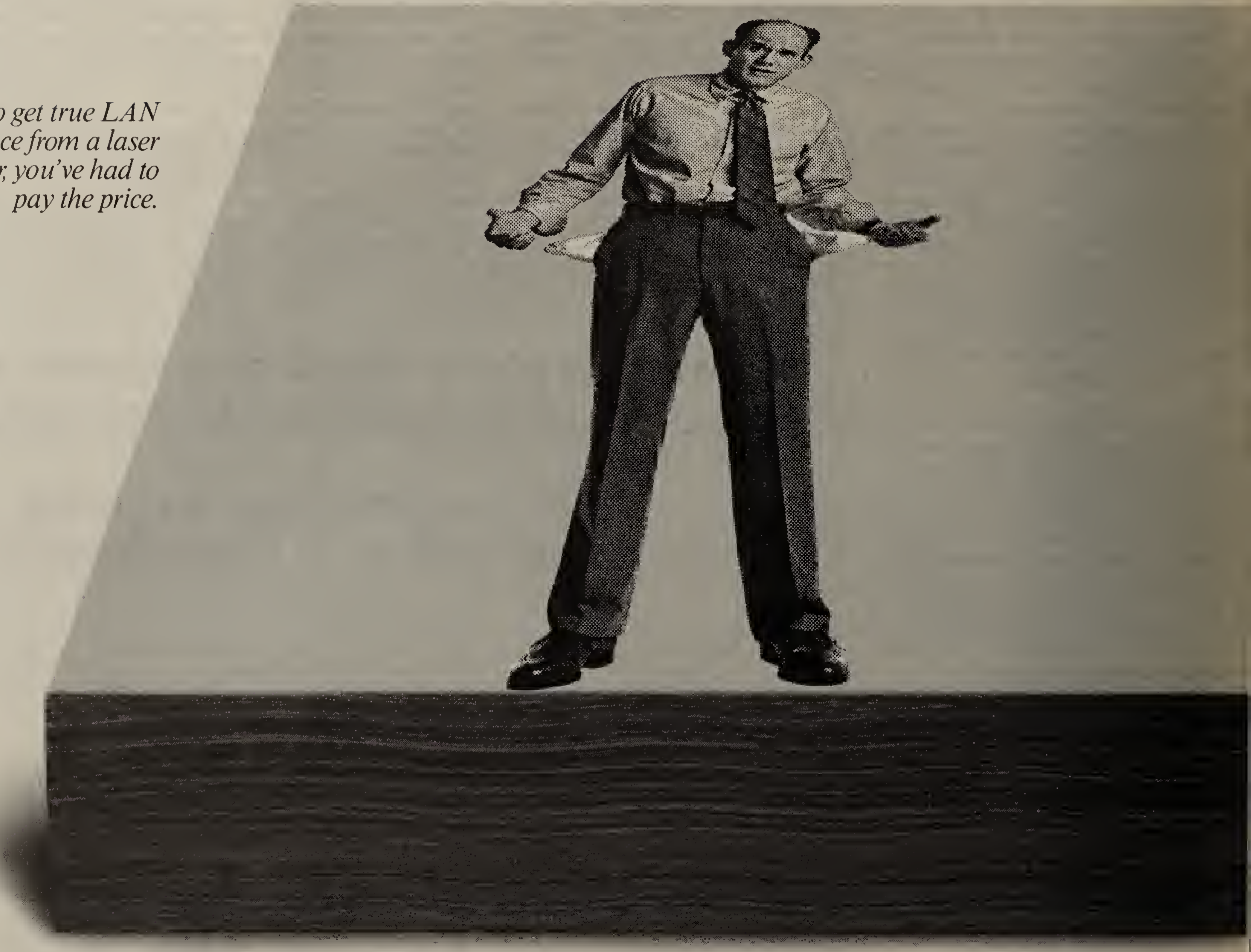

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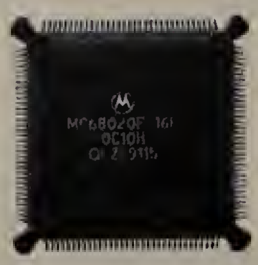

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PRINTERS. PAGES AHEAD.

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functional areas can be used to provide security in some way.

Specific security management functions include such basics as passwords. Multilevel passwords, which require at least a password and a user code, are the best.

Traffic reporting and histories as well as audit trails can provide keys to suspicious or unauthorized activity. Network map displays may be configured to show unauthorized entry or use of the network.

The ability to detect a network breach and generate an alarm is also important. A network breach alarm signals the control console when an unauthorized user enters the network and should detail where and when the breach occurs. Unauthorized user alarms signal the console when someone tries an unauthorized password or other code to enter the network. An INMS should be able to report the number of these attempts and the locations where entry was attempted.

Trade-offs

Because ISO defined such a breadth of functions, it quickly became apparent that no single INMS could do everything well and still be affordable.

There are trade-offs between functions, speeds, features and price. The system may have great functionality but be exceptionally slow. It may be easy to use but unable to manage more than a few elements or NMSs.

To reduce these trade-offs, many vendors are working together to develop interfaces that each party can use and sell. These interfaces allow one vendor's INMS to monitor and manage information from another INMS, NMS or EMS.

A few vendors are developing interfaces to others' systems using their own technologies and methods. But for most, it's too expensive and time-consuming to do it all alone.

"Development agreements between vendors are key," says Laura Whitcher, manager of NMS products for Motorola Codex of Mansfield, Mass.

"We can't do everything for everybody," she said. "It's good to have the ability to develop third-party interfaces on your own, but it's good to have the development relationships, too."

Standards

Each INMS vendor uses available versions of various network interconnection standards, including Open Systems Interconnection, Transmission Control Protocol/Internet Protocol and industry de facto standards such as IBM's SNA to make its system work with as many other systems as possible.

But each implementation is different — different enough, in fact, to severely impact the interoperability between management systems.

Most existing INMSs are based on two sets of standards: the Simple Network Management Protocol (SNMP) associated with TCP/IP, and the Common Management Information Protocol/Common Management Information Services (CMIP/CMIS) protocol suites of the OSI world. SNMP defines how management data is exchanged between devices and management stations and is used primarily in TCP/IP networks today, while CMIP and CMIS are ISO protocols defining a set of management services

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Letters

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manufacturers to move fax messages around a network.

Computers can fax quite well, although transmission speed is often significantly slower than today's stand-alone Group III fax machines. Purchase orders and other standard business forms that are typically generated by a computer are perfectly suited for automation by computer/fax integration.

But what about those secondhand documents whose contents need to be communicated? These include handwritten notes, typed or annotated copies, drawings, artwork, and newspaper or magazine articles. Is it efficient to force these to be scanned into a computer before they can be sent?

Using Mr. Robinson's measure of the final form vs. intermediate step, something is out of whack. This method would change the work flow to justify the technology. Imagine the line at the scanners. Is this progress? Or are we saying that everyone will have a scanner on their desk?

In addition, fax can be made as secure as any computer if the application calls for it. As far as confirming authenticity, there are few things as acceptable as a signature and a letterhead, especially when communicating to the outside world.

When the day arrives that everyone's desk is equipped with a screen, scanner and keyboard, stand-alone fax may disappear. When computers can talk to each other with the same ease as fax does today, there may be no need for faxing. When it's just as fast, easy and cost-effective to install a network of computers, there may be little justification for stand-alone fax.

When elevators were invented, did people remove the stairways? Odds are the need for fax machines will be steady for some time to come.

Stacy Steeves
Manager of product
development
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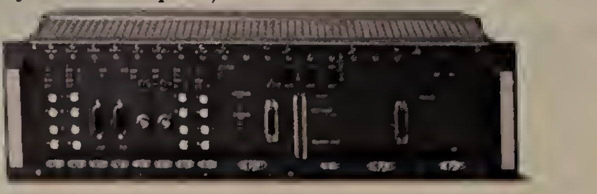

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(continued from page 48)

and how management systems collect data.

According to users and vendors, SNMP is the de facto standard for now, but users are starting to ask for compliance with OSI CMIP/CMIS standards in INMS requests for proposal.

"SNMP will be the overriding factor for now," says Liberty Mutual's Durney. "It is available now, and more vendors seem to be complying with SNMP than CMIP."

The reason for this is simple: SNMP is widely available, while OSI protocols are not.

"Users need standards-based systems, even if the standards themselves aren't finalized," says George Cox, marketing manager for AT&T's Accumaster Integrator. "The fact is, ISO standards are not in place yet, but there are active nets that need net management systems today."

Still to come

Despite problems with standards, INMSs have progressed exceptionally well during the short time they have been available.

The ongoing move toward OSI implementation is making network management easier and helping vendors build systems that work together.

But few vendors are willing to give up control of their own management systems and devices. Most prefer that their systems control their own devices and report necessary information to other management systems.

Those vendors that are willing to let other management systems control theirs are still reluctant to give up any advantage they may have in proprietary technology or in proprietary implementations of standard technology.

Still, users are much better off than ever before. Every year brings advances in network management, and almost all of these advances are applicable to existing technology.

So while true INMSs may not be here yet — and, in fact, may never arrive — users still have exceptional power and flexibility available to turn their networks into the competitive tools they should be. ☑

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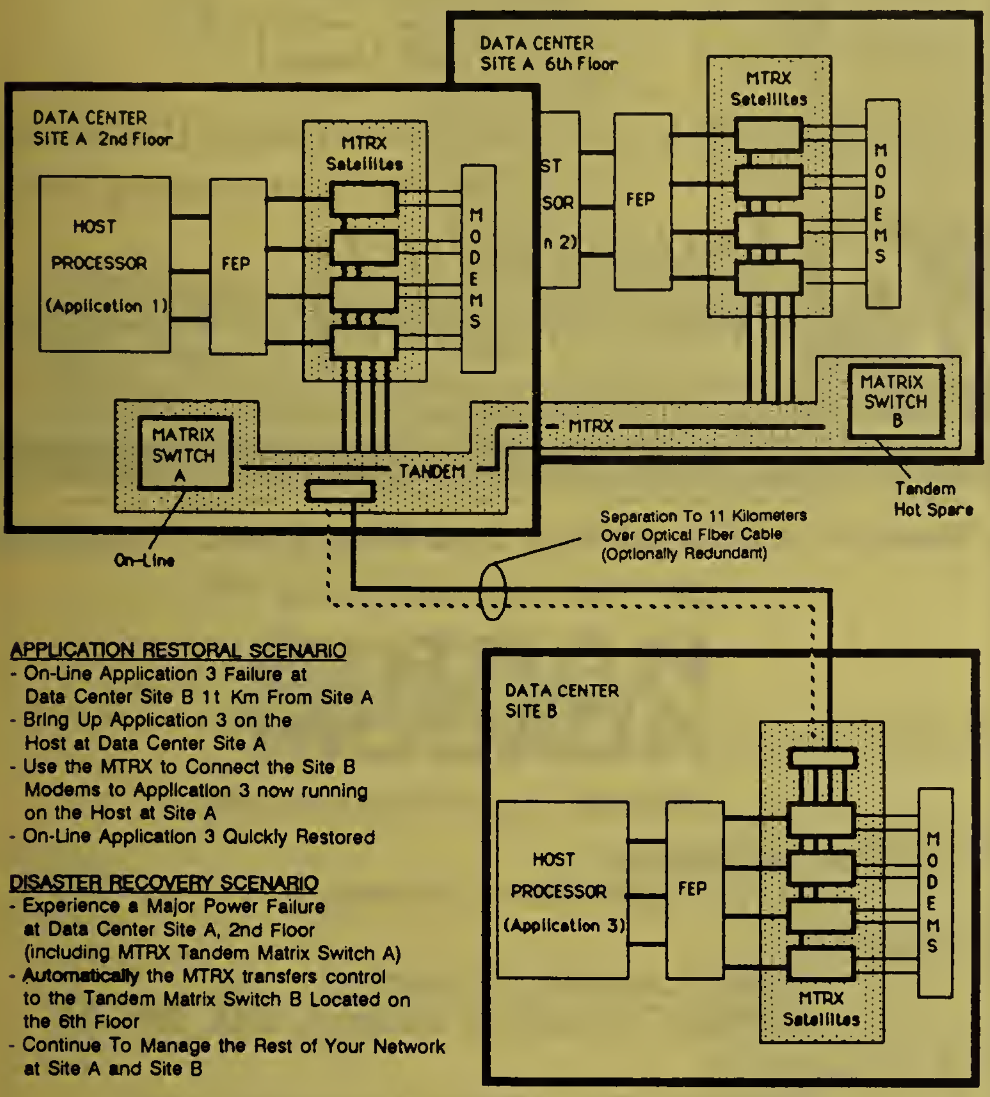

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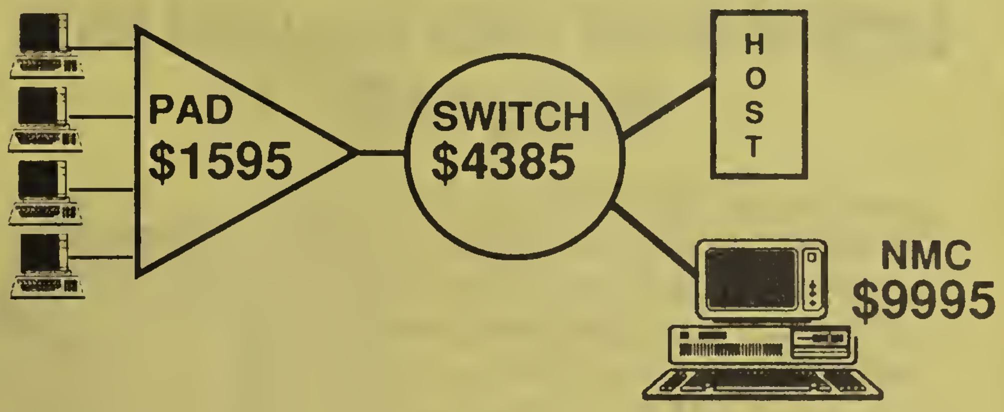

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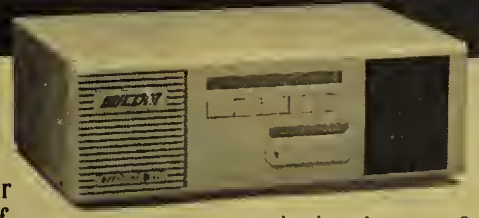

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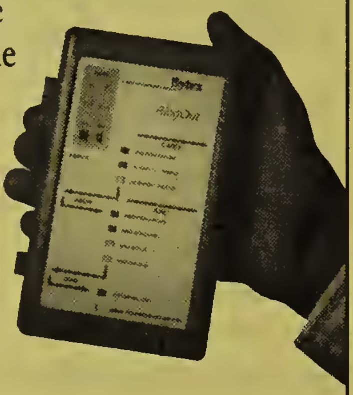

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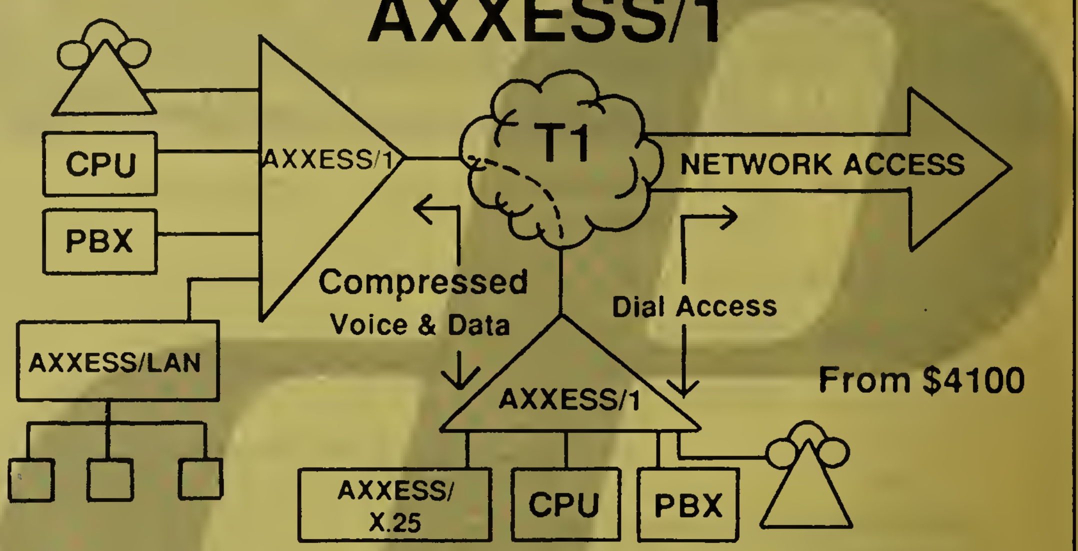

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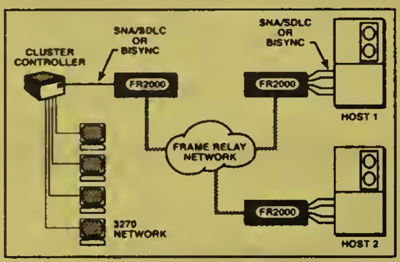

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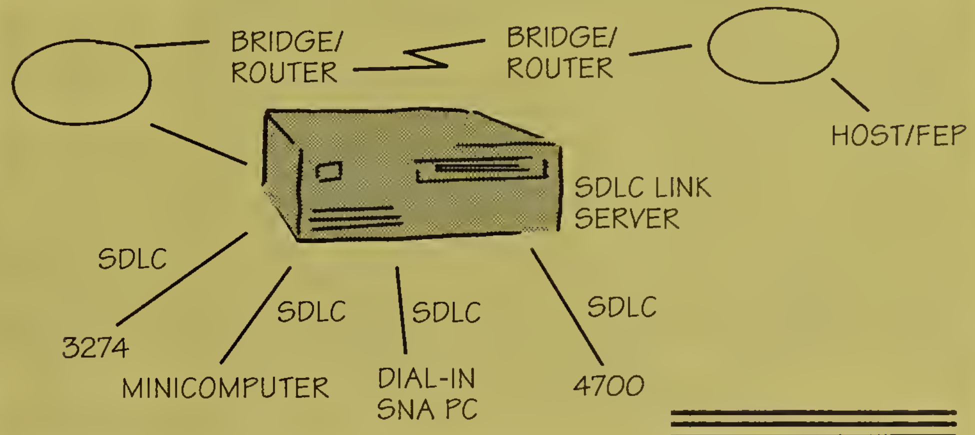

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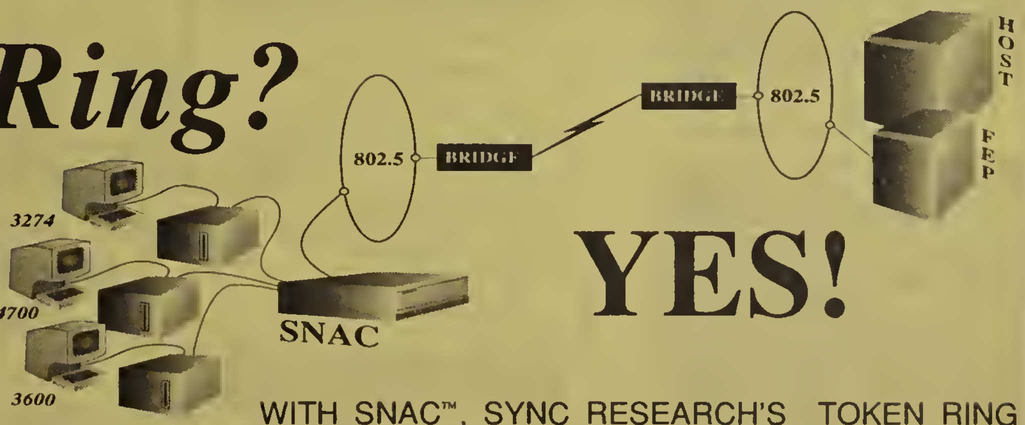

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There will be a MANDATORY vendors' meeting held on Wednesday, December 18, 1991, at 9:30am. on the campus of Central Connecticut State University. To register for this MANDATORY meeting, to request a copy of the RFP, or for further information, please contact Mr. James J. Malone, Associate Executive Officer for Management Information Systems, Connecticut State University, Barnard Hall, 1615 Stanley St., New Britain, CT 06050. (203)827-7211

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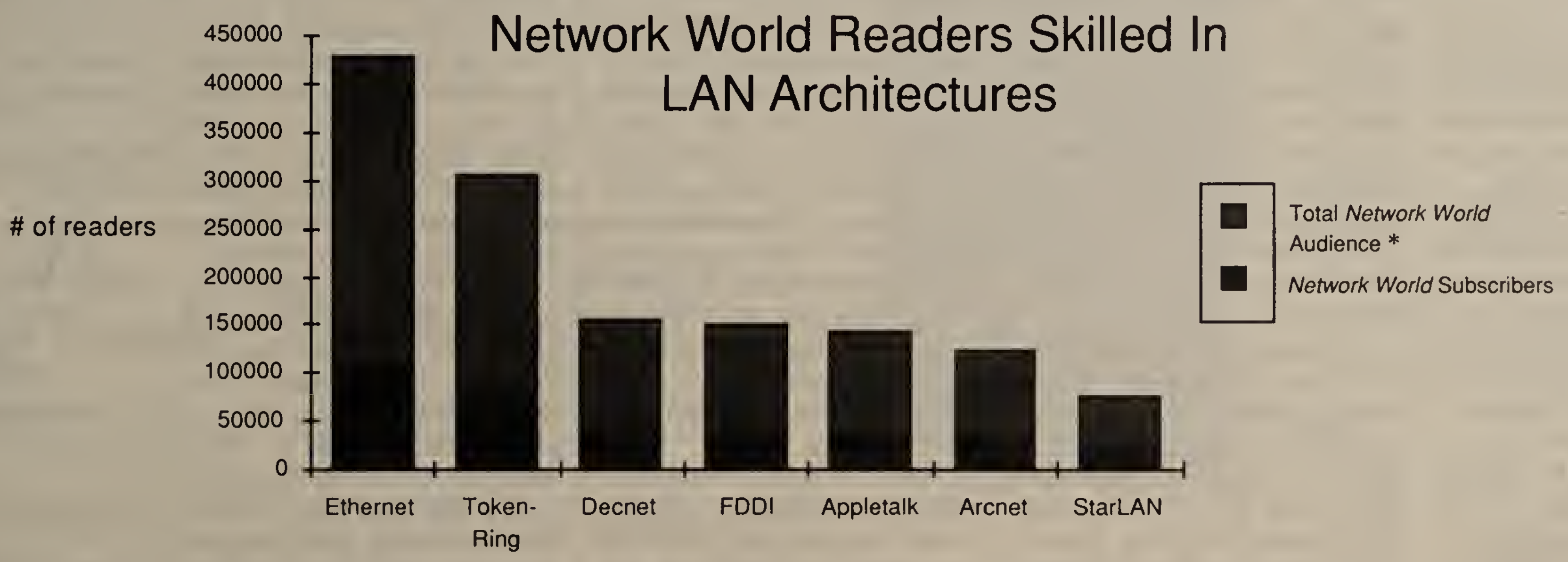

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Lotus outlines groupware plans

continued from page 1

firm in Framingham, Mass. "As applications are becoming more open and modular, Notes needs to be opened up."

Lotus has already provided users with a fairly rich application environment through Notes' own document handling, messaging, directory and security features. But to encourage users to build work group applications atop Notes, the product needs to support improved database access and other capabilities.

The company is also feeling competitive pressure. Rival software suppliers Microsoft Corp., Borland International, Inc. and others are on the attack, saying their upcoming groupware products will be built around emerging messaging and database standards, unlike what they call Notes' "closed" environment.

"Lotus made a heroic effort in building the Notes environment," said Jamie Lewis, vice-president of Clarke Burton Corp. in Salt Lake City. "But now they must open it up to stay successful."

Today, Notes has a built-in database that is primarily designed to store text and unstructured data.

Lotus is currently working to give Notes users access to a variety of other database management systems, allowing Notes-based applications to draw on a much wider array of information sources.

To provide that level of data access, Rokoff said Notes will use the DataLens drivers that Lotus has helped developed to give its 1-2-3 spreadsheet offerings access to virtually every major database product (see "1-2-3 gets wider data ties," this page).

"Users are saying, give us access to more types of data that we can capture easily," Rokoff said. "So we are doing work now in terms of providing connections to SQL databases."

Other data handling features are being added into Notes, including full-text search and retrieval capabilities for Notes databases as well as "compound" document support, which will allow users to create documents that pull information from different types of applications.

One key feature being prototyped by Lotus is a Notes-based software distribution capability. Although it is too early to tell whether this work will result in a product, Rokoff said users have a critical need in this area and there is not much available to solve this problem.

On the messaging front, Lotus is incorporating its proposed Open Messaging Interface (OMI) into Notes so both cc:Mail and Notes users will have a common messaging application program interface (API). IBM and Apple Computer, Inc. have also pledged to use the OMI API into their products.

By supporting OMI, Rokoff said Notes applications will be able to interoperate across multiple computing platforms with other mail-enabled applications built to the OMI specification.

This cross-platform strategy is also reflected in Notes' upcoming support for Apple Macintosh, which is in addition to the Microsoft Windows and OS/2 Presentation Manager clients that Notes already supports.

SNA and X.25 support

Lotus recently entered into an agreement with IBM to integrate Notes into IBM's OfficeVision strategy. As part of that deal, Lotus will be offering new connectivity options to enable IBM customers to implement Notes more effectively across an enterprise-wide net.

Lotus is developing an SNA driver so Notes traffic can be carried over IBM SNA backbones. Today, most users employ separate communications facilities to link Notes servers.

Lotus says it will also add a driver to support X.25.

In addition, the company has been working for months to develop a version of Notes written to the Unix Sockets interface that is the foundation of Banyan Systems, Inc.'s VINES network operating system. The two companies will build on that configuration by enabling Notes to work with Banyan's StreetTalk directory service.

Beyond these moves to open up Notes, Lotus is also considering providing by early next year more than 50 customer-developed Notes applications, such as sales tracking or help-desk support, in order to compel users and spur greater interest in developing Notes applications.

1-2-3 gets wider data ties

CAMBRIDGE, Mass. — Lotus Development Corp. recently disclosed that it will soon offer a graphical database query tool for its 1-2-3 and is working with vendors to widen and simplify the spreadsheet's database connectivity options.

Lotus said it is working with an unnamed vendor to provide a single DataLens driver that would enable 1-2-3 users to access more than 40 minicomputer-based database management systems. The firm has worked with DBMS vendors to provide a set of DataLens drivers that give 1-2-3 access to a variety of databases. Most drivers provide access to a single DBMS.

The new graphical database query tool for 1-2-3 will work hand in hand with DataLens drivers and will make it easier for users to bring data into the spreadsheet for other information sources. Today, 1-2-3 users access data through a command-line approach.

"The front-end query tool is one of our biggest priorities," said Jim Burnham, product line manager for networked applications at Lotus.

Although details are sparse on the yet-to-be-announced product, Lotus said the new query tool "will allow users to select the database and the data they want using a point-and-click interface." No dates were given for announcement of the tool, but Lotus confirmed that work is far along and the product would be unveiled soon.

Lotus said it is also actively pursuing relationships with other vendors to gain access to additional database drivers.

For its next deal, Lotus said it is working with a vendor to procure a single driver that could provide access to 44 minicomputer databases transparently.

There is some speculation that the vendor is Oracle Corp.; Lotus said the driver includes server software and database-specific interfaces running in different operating environments, which is how Oracle's SQLxNet works. But neither company would comment.

Lotus already supports IBM's Information Warehouse strategy, which provides access to a variety of IBM mainframe-based DBMSs via the Enterprise Data Access product.

— Tim O'Brien

Firm to offer int'l frame relay

continued from page 2

56K or 64K bit/sec access to a node configured to send and receive international traffic, and $2,100 per month for dedicated 56K or 64K bit/sec access to a U.S. node configured to send and receive only domestic traffic.

These rates include a bridge/router, data service unit/channel service unit and the provision of dedicated, local access lines linking customer premises equipment to the nearest ExpressLANE node. If users supply their own bridge or router, BT North America will knock about $300 off the monthly service charges.

But users pay surcharges if their premises is far from the ExpressLANE node. Users outside of London , for instance, will pay an additional $200 per month. In France, BT North America covers all local access charges up to $850 per month. Users pay all local access charges exceeding this amount, plus a 20% surcharge, according to Joan Carmichael Sides, manager of BT North America's open systems product group here.

Some analysts said at these prices, ExpressLANE costs about the same as international private lines. This would give international private lines an edge since they are available in many more areas than international frame relay service, said Leonard Elfenbein, president of Lynx Technologies, Inc., in Little Falls, N.J.

But Teradata Corp., a relational database management system manufacturer in El Segundo, Calif., expects to reap big savings from BT North America's international frame relay service.

Teradata plans to begin using 56K bit/sec ExpressLANE service between London and El Segundo this month, said Mark Heil, the company's senior network specialist. This link will carry both Synchronous Data Link Control traffic, as well as Novell, Inc. Internetwork Packet Exchange (IPX) traffic.

In the first quarter of next year, Teradata plans to cut over 64K bit/sec ExpressLANE service between its headquarters and sites in Paris and Munich, Germany, that will carry both Transmission Control Protocol/Internet Protocol and IPX traffic.

Heil said BT North America will charge about $12,400 per month for ExpressLANE service to the four Teradata facilities. Teradata would have to pay more than $18,000 a month to build a 56K and 64K bit/sec private-line network, he said.

A private-line net could potentially be cost-justified if international voice and facsimile traffic were routed over the circuits along with the data traffic, Heil said. No other vendor currently offers frame relay service between the U.S. and Europe, and only one other vendor, Graphnet, Inc., in Teaneck, N.J., has announced pricing for an international frame relay service, which will be available in the first quarter of next year.

Wanda Montano, Graphnet's senior product manager, said the vendor plans to charge $5,500 per month for dedicated 64K bit/sec access to its frame relay service in London that could support data bursts up to 256K bit/sec. Graphnet plans to charge $6,300 per month for 64K bit/sec access to its frame relay service in Paris that could support data rates up to 256K bit/sec.

In the U.S., Graphnet plans to charge $1,200 per month for the same 64K bit/sec frame relay service, which will be available from 14 U.S. cities.

NREN is one step from reality

continued from page 4

has already taken in adding T-3 services to NSFNET through ANS.

Wolff said NSF will structure the dual-award contract as a services contract and call for the designation of a routing coordinator, a third party responsible for determining where routers would be used to link the networks.

He emphasized that the building of the NREN will also involve the National Aeronautics and Space Administration network, called the NASA Sciences Internet, and the Department of Energy's Energy Sciences Network.

Laura Breeden, executive director of the Boston-based Federation of American Research Networks, the association of the regional Internet providers, applauded the decision by NSF to award the NSFNET to two parties.

Breeden said the decision would eliminate the monopolistic environment in the provision of NSFNET backbone services of today. It was important that at least two vendors would be involved in implementing the technical developments proposed by the NREN bill, he said.

Michael Nelson, key staff aide to Gore for the NREN bill, said the NSF dual-award concept appeared to be consistent with Congress' intent that the network be developed in a manner that fosters and maintains competition.

Others questioned whether a dual award was the best path for the NREN to take, however. Mike Roberts, vice-president of networking at Educom, a Washington, D.C.-based group representing higher education's support for NREN, said he backs NSF's decision to reissue NSFNET rather than extend the current contract, but he questions whether a dual award was the best solution.

Roberts said IBM and MCI have invested out of their own pocket to develop products in areas such as T-3 routing, which have presented tremendous technical hurdles. The dual-award tactic may scare off that kind of investment, he cautioned, because vendors might have to share the fruits of their investment with competing firms.

> NSF will structure the dual-award contract as a services contract.
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Roberts urged NSF to structure the upcoming NSFNET solicitation so that once the bids are received, NSF will be free to award it either as a single or dual award.

Net control issues cloud frame relay

continued from page 1

lieves the congestion problem.

StrataCom, Inc., for example, has large buffers on its IPX multiplexers to handle data that cannot be forwarded over a frame relay link because of congestion.

Competitors contend that while that prevents packets from being thrown away, it does not solve the congestion problem and may even compound it.

Some networks, such as those based on Systems Network Architecture and Novell, Inc.'s NetWare, are designed to retransmit data if packets are not acknowledged within a specified time. Ken Rehbehn, senior scientist at Netrix Corp., said the delay inherent in buffering can cause end systems to consider packets lost and to retransmit them, creating more congestion.

Larry Mauceri, senior director of product planning at Hughes Network Systems, Inc., said his company is applying some of the same congestion control features it uses for its X.25 packet switches to frame relay. That includes the ability to periodically reroute traffic if congestion occurs.

But critics of that capability maintain that it also falls short because it may only serve to congest other links and does nothing to throttle back the source of the traffic causing the congestion, which is the only truly effective way to reduce congestion.

The Transmission Control Protocol/Internet Protocol and Open Systems Interconnection protocols both have mechanisms for doing just that.

TCP/IP, for example, has transport layer mechanisms that assume there is a congestion condition if packets are becoming lost, then throttles back the flow of data from end computers, said John Coons, director of technology research and planning at BT North America, Inc.

"This would be one argument for using TCP/IP as your backbone protocol in a wide-area network, and a lot of people are going that way," said Jeff Held, a partner at Ernst & Young, a Vienna, Va., consultancy.

The frame relay standard includes mechanisms for congestion control — Forward Explicit Congestion Notification (FECN) and Backward Explicit Congestion Notification (BECN) bits — that have yet to be successfully implemented. When congestion exists, backbone switches send a FECN or BECN bit to attached feeder devices, such as routers, informing them to slow down. The router, in turn, has to tell attached computers to slow down. At least, that's the way the bits are intended to work. "In an ideal world and in about two or three years, things should work that way with most people's products," Coons said.

In the meantime, frame relay service providers such as BT North America, Sprint Data Group and MCI Communications Corp. said they're dealing with the problem simply by providing more bandwidth than needed to prevent congestion in the first place.

That may prove to be a hidden benefit for users. One of the advantages of frame relay services is that users are typically guaranteed a minimum amount of bandwidth, known as a committed information rate, but can often exceed that capacity if bandwidth is available in the network and on the user's access trunk. Since carriers are planning to underutilize trunks, it's likely spare bandwidth will be available.

The congestion issue is a tougher one for users with private nets because they'll have to pay for extra bandwidth if they underutilize frame relay trunks.

"This whole area is very new, and nobody really knows the answer to all these questions," Held said.

Managing frame relay services is another issue carriers are addressing, and not a moment too soon. The current lack of management tools threatens to keep some users away from frame relay services.

"We want to be able to see into the [carriers'] network and reconfigure or add circuits as we need," said Ian Cope, a senior systems analyst with a major information services provider.

Most carriers said they plan to offer users monitoring tools for frame relay services, but AT&T is the only carrier to date that has publicly detailed plans to deliver such a system ("AT&T touts SNMP tool," *NW*, Nov. 25).

Another carrier, BT North America, ultimately wants to tie frame relay management into its Concert Integrated Management System, said Jim McWalters, section manager for net management products at BT North America. In addition, Nynex Corp. said it plans to provide such management information as the status of physical and logical links and basic configuration data when it rolls out a frame relay service early next year. ⧉

Senior Editor Wayne Eckerson contributed to this story.

Study results give glimpse into viruses

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rate of between three and five per day.

The two common viruses have different characteristics. Stoned is a boot sector virus that can corrupt a hard disk. Machines infected by Stoned or one of its variants become slow and may display a message saying, "Your computer is now stoned," during booting.

The Jerusalem virus and its variants also slow down computers and are typically set to trigger on Friday the 13th. Some variants, once triggered, will delete all programs that are run.

The main source of virus infections was shared diskettes. Forty-three percent of all infections reported in the study were traced back to users bringing diskettes from home. Another 12% came from sales demonstration disks or those used by repair service personnel. Another 7% of the infections were due to downloading infected software from electronic bulletin board systems.

Since shared disks are the largest single source of viruses, users can fight back by instituting policies on handling disks. However, David Stang, director of research at NCSA, warns that companies must be practical.

Stang cautions that no-disks allowed policies seldom work. Instead, he suggests that companies create procedures for handling disks, such as screening diskettes before use with some type of detection software. "This could even be the responsibility of the user bringing in the disk," he said.

Such a policy would protect against the majority of virus infections. "Stoned and Jerusalem account for many of the infections, and there are many [software packages] that can detect and remove these two viruses," Stang said. ⧉

Object definitions to ease integration

continued from page 4

the catalog will prevent a duplication of development efforts.

Paul Weekes, director of information technology management at Motorola, Inc. and chairman of the user requirements subcommittee of the forum's User Advisory Council, said these efforts will solve some problems.

"A worse problem than not having object definitions is having duplicated or conflicting ones," Weekes said. "Where five groups define modem differently, what do you do with it?"

Object library

For about a year, the forum has discussed establishment of the library, and several members are testing downloads.

The library will include object definitions registered with the forum, as well as definitions logged with other registration authorities, including some large vendors.

User interest in the establishment of a library has been high, forum officials said. Users need to know whether the devices they have to manage have been defined. They also can use the objects to build their own applications.

"The library is going to make the deployment of systems by users in the field less expensive," said Bill Gilbert, director of network management at AT&T and president of the forum. "If everybody developed different objects, users would be stuck trying to make them work with each other."

The forum has no interest in retaining control of the library on a long-term basis, Adams said. But it felt an open library needed to be established, and users and vendors couldn't wait any longer.

Initially, information from the library will be accessible via a diskette to be made available by the forum, Adams said. Once the level of interest is determined, the library may become an on-line system.

Adams said the forum has already defined a slew of objects for its interoperable network management specifications and has assigned the objects unique identification numbers.

Many large vendors have been authorized by the ISO or affiliate organizations to register objects on their own. The forum will provide its registration services for companies that do not have the resources to become registration authorities. The forum plans to offer the registration service to its members initially and later will offer it to others.

The forum's linchpin project is the development of the "Management Information Catalogue," a comprehensive list of objects from multiple libraries, Adams said. The catalog will be designed to prevent vendors and users from spending time delineating objects already defined.

The catalog is a joint project with the OSI Implementors Workshop Network Management Special Interest Group. ⧉

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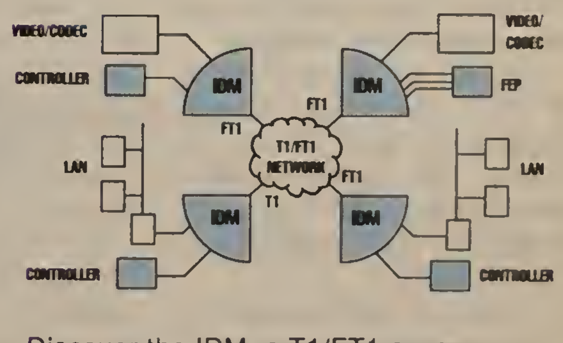

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Sea-Land tests client/server net

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Sea-Land, an international shipping services provider, is evaluating this client/server environment in an effort to enhance terminal operations at its North American ports. The company operates shipping terminals at major ports in the U.S. and abroad, where it manages the flow of cargo delivered and picked up by trucks or ships.

Sea-Land's current host-based terminal management systems support several homegrown 3270 applications, which force employees at remote ports to use data-intensive screens.

Because most employees are computer novices, port managers have been searching for a way to provide a simpler user interface that displays only those questions clerks need to answer.

To meet that and other goals, Sea-Land plans to install a prototype LAN-based terminal management system this February at its Charleston, S.C., location so users can run applications locally. This will enable internal programmers to use tools such as Microsoft Corp.'s Visual Basic to customize user interfaces on applications that require 3270 sessions to access host data.

Port managers from Honolulu, Houston, Jacksonville, Fla., Oakland, Calif., and Tacoma, Wash., have all voiced interest in the new net environment.

The test bed

Sea-Land plans to outfit its Charleston site with a SynOptics Communications, Inc. Series 3000 wiring hub supporting a 16M bit/sec token-ring network tying Windows-based IBM Personal System/2 Model 55sx microcomputers to a high-end PC-based server.

The network is based on Microsoft's recently announced LAN Manager Version 2.1 network operating system (see graphic, page 1).

Sea-Land will run DCA's Select CS software on the server to enable client workstations to transparently access remote hosts. The move will enable Sea-Land to develop applications that run locally, assembling shipping information from a variety of points into a single form and routing that transaction record to the host for approval of the local transaction.

"Everything will still tie back to the mainframe," said John Darienzo, manager of Sea-Land's terminal automation systems. "Based on the size of a database required to perform local validation of data, a totally distributed system would be too costly in our smaller terminals at this point in time."

Efforts are under way, however, at Sea-Land's terminals in Hong Kong and Rotterdam, the Netherlands, to build fully distributed systems, he said.

When workers need to verify whether a container can be released or checked into the yard, they will enter data into an onscreen form. Upon completion, the local application will use DCA's Advanced Program-to-Program Communications tool kit to establish a peer-to-peer connection with the mainframe and update the database accordingly.

The goal, Darienzo said, is to bring a miniature data center support infrastructure down to the PC LAN level in order to address issues such as security, software distribution, virus protection and performance monitoring.

Even though Sea-Land's data still resides on the host, the decision to distribute intelligence out to the shipping terminals was made, in part, to capture data locally and make a decision whether to continue processing it or stop the operation.

"While we won't be able to validate data at the local level, we could make a decision to go ahead and process shipping transactions and update the mainframe later," Darienzo explained.

In the event that happens, an SQL Server database at the local site would be cut over and act as a repository for local transactions, enabling employees to continue working. That database could later send a batch record update to the data center.

"We won't be operating with the most recent data, but we'll still be working, which is better than what we'd be able to do currently," Darienzo said.

Another benefit of moving to a client/server setup, Darienzo said, is that the Select CS software can support multiple links back to the host and perform dynamic load balancing between them.

That means, for instance, that Sea-Land could add a second Select CS, which would give them a hot backup in the event a primary unit fails.

In addition, the Select CS would provide load balance between wide-area lines, so a primary communications server could off-load traffic to the other unit to avert congestion.

The distributed net will also enable Sea-Land to integrate other technologies, such as expert systems for yard management, and to deploy remote wireless terminals on the LAN.

Darienzo said both beta copies of LAN Manager 2.1 and Select CS 1.1 have run without any major hitches.

He warned other users considering a move to a client/server net should do so carefully.

"Anyone that thinks they can go client/server today without looking at all the possible implications is crazy," Darienzo said. "Things are just getting to the point where you can trust the products. Six months ago, many of the pieces we needed and are using today just were not there."

Firms to develop OLTP NetWare

continued from page 4

audience of NetWare users because most are not operating in OLTP environments and do not need complete fault tolerance.

"People are not scrambling for this," said Cheryl Currid, president of Currid & Co., in Houston. "You can already get a server that won't fail. The market for this kind of fault tolerance is just not very big."

Another factor limiting the software's appeal is the cost of running it on a Stratus machine positioned as a server. A Stratus computer can cost from $30,000 to $9 million. Analysts said that is expensive for a server.

"This is a valuable release, but people will not buy a Stratus based on price/performance," Freund said.

Another factor that could limit the success of NetWare for VOX is the possible release of Novell's own Systems Fault Tolerant (SFT) III capabilities for NetWare. According to analysts, SFT III provides fault tolerance by specifying that two servers run in synchronization. If one server fails, the other will automatically take over without affecting the processing.

In contrast to the NetWare for VOX operating system, SFT III capabilities — as in all other versions of NetWare — will be hardware-independent.

The only problem with the SFT III capabilities is they are not available. Older versions of SFT within NetWare offer disk mirroring and disk duplexing capabilities, but they do not specify two separate servers.

According to Freund, Novell has been promising to release SFT III for more than a year but has not delivered. Officially, the vendor says SFT III may never be released.

Industry reports said Novell's agreement with Stratus is only the first of several pacts it will sign to port NetWare to vendor-proprietary platforms.

Analysts said Novell may be planning to announce a deal with HP by year end to develop a version of Unix-based Portable NetWare for HP's Reduced Instruction Set Computer (RISC) workstations.

DEC is also expected to team with Novell on a version of NetWare for VMS, while Data General Corp. is expected to add Message Handling System compatibility to its version of NetWare for the AViiON RISC workstation line.

Company unifies LAN mgmt.

continued from page 1

said Nick Lippis, principal of Strategic Networks Consulting, Inc. in Rockland, Mass.

Anura Guruge, a lead consultant at BBN Communications Corp., a Cambridge, Mass.-based consultancy, agreed. "The ability to manage the entire internetwork from a single console will be significant to [IBM] users," he said.

Under IMS 5.0, CrossComm has rearchitected the product to support Hewlett-Packard Co.'s OpenView network management software, which will integrate SNMP and token-ring management data and display it on a single Microsoft Corp. Windows-based management console running on an Intel Corp. 80386-based personal computer.

CrossComm's support center can monitor problems in the user's network.

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Until last month when CrossComm announced SNMP support, its IMS net management software strictly supported token-ring devices from a PC-based management console. IBM's LAN Network Manager only monitors IBM's Token-Ring local-area networks and bridges.

The IMS management console will accept data from any device supporting an SNMP or IBM LAN Network Manager agent, such as routers, bridges, servers and client workstations.

IMS will monitor parameters of such things as address tables or packet and filtering information. It will also collect statistics on actual line and network status.

The system culls data from the agents and either passes it to IBM's NetView or takes the appropriate remedial action itself. NetView, however, cannot pass commands to the IMS to correct error conditions.

Isolating problems

IMS 5.0 automatically generates a physical network topology map by broadcasting a generic message across the network and waits to see which devices respond. Based on those responses, it builds a map of the devices on the net from which network administrators can quickly isolate problems and obtain immediate status information.

This capability is important because user networks tend to change frequently, making network maps obsolete before an administrator can revise them, said Tad Witkowicz, CrossComm's president. The sensing capability addresses this issue by automatically revising the map.

IMS 5.0 will also include a built-in network analyzer that enables users to isolate and troubleshoot problems from an IMS station, thus eliminating the need to dispatch a technician to address the problem.

Other troubleshooting tools include automatic fault isolation and connectivity testing, such as running Logical Link Control tests of token-ring devices or loop-back tests of wide-area devices.

The vendor will also provide a version of IMS that enables a remote network manager to display the management console from any PC or laptop equipped with a telephone modem.

CrossComm also offers an optional 24-hour remote network monitoring service with IMS. Through a modem housed in an ILAN router, CrossComm's support center can monitor and detect problems in the user's network and run diagnostic tools remotely in order to pinpoint faults.

ILAN IMS 5.0 is expected to be available in early January. The cost will range between $3,000 and $4,000. ILAN 4.0 currently sells for $3,500.

NETWORK WORLD

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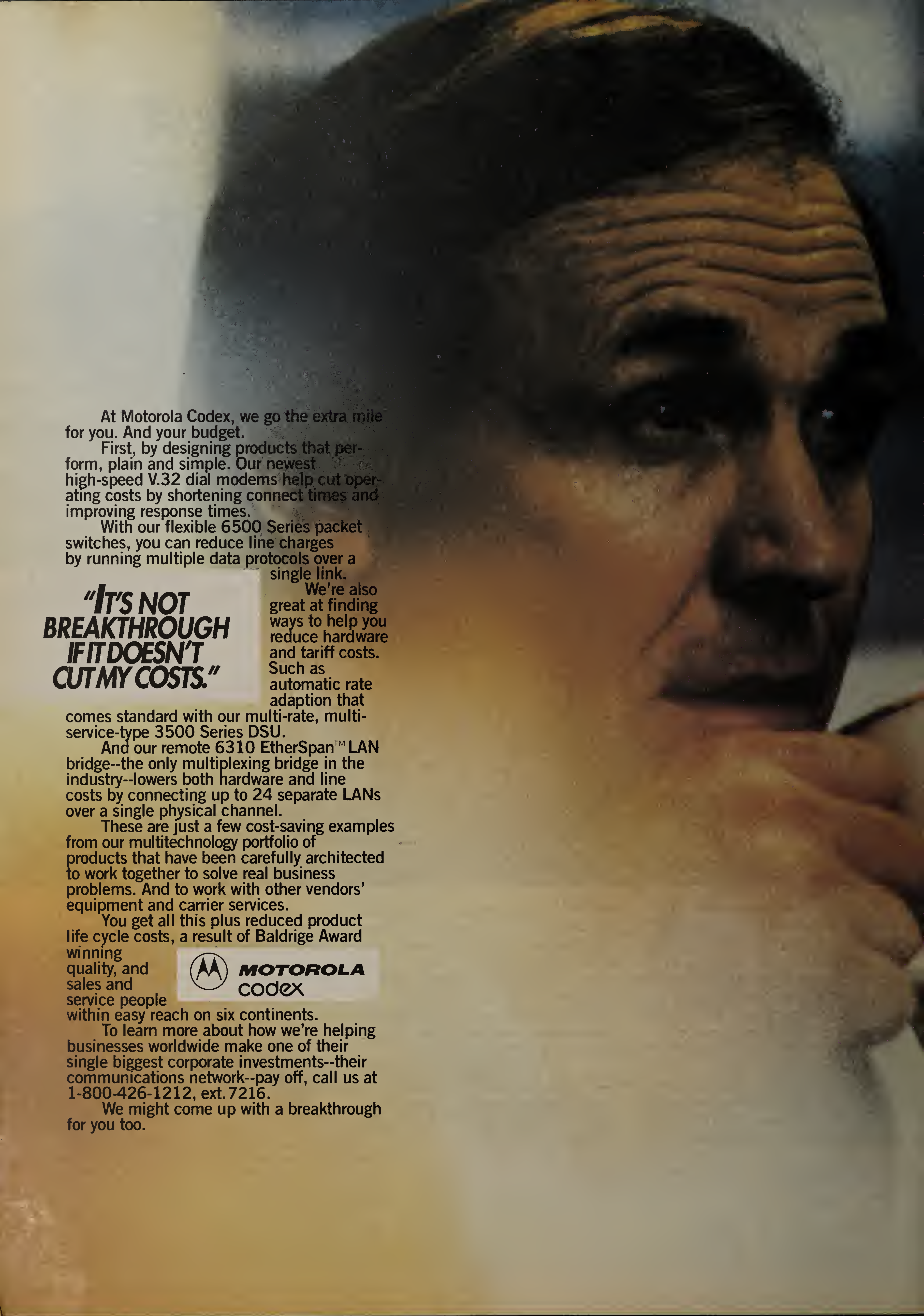

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